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TABLE OF CONTENTS ON LAST PAGE OF READING.**RUBBER CHEMISTS IN WARTIME SPIRIT.**

NO one who attended the sessions of the fifty-fifth meeting of the American Chemical Society, summarized on another page, can doubt that under the stimulus of war American chemists are fast winning our freedom in a field where we were once content to be dependents. As much of the details of many important discoveries and advances must remain untold for the duration of the war, the convention as a whole and the meeting of the Rubber Section in particular, was important, not so much for the information imparted as for the optimism and cooperative spirit shown. And such meetings are highly essential in fostering the true wartime spirit. Chemical ingenuity has thus far been the mainstay of the German resistance, but it was made plain by the leading speakers that the Allied nations are now proving themselves more than a match for their versatile enemy, and that in this war

of wits America is already playing an important part. Looking ahead to the cessation of hostilities, those who hope for the continued growth of our great chemical industry, now so rapidly being built up, will appreciate the value of the constructive suggestions made by President Stieglitz regarding protective duties, patent registration, and equitable profit sharing with research chemists, which has been largely responsible for German leadership in chemical manufacturing.

RUBBER IN AIRPLANE BUILDING.

IMMEDIATELY after the great \$640,000,000 aviation bill became law, Howard E. Coffin, chairman of the Aircraft Production Board, announced that more than 20,000 planes would be built as the first increment and that more would follow as needed to maintain Allied air supremacy. The first increment alone brings to manufacturers of rubber goods a business of \$1,000,000 to \$1,500,000 or more, for original equipment, and replacements will reach a considerable additional sum. The standard training machine, for instance, a small tractor biplane of the JN4A type, requires in its equipment rubber products to the value of about \$55 per plane, including such things as small hose connections on the water pipe and gasoline lines, 1/2-inch rubber exerciser cord used as shock absorbers, two tires 26x4, handle grips, grommets and engine ignition system insulation. Other estimates for the medium size or school machines weighing about 1,500 pounds run as high as \$81 each.

The successful final tests of the new "Liberty Motor" for airplanes and the well advanced plans for quantity production augur well for the rapid construction of our great aerial army. By another summer it is estimated that the rate of production will reach fully 3,000 airplanes monthly.

THE SECOND LIBERTY LOAN.

THE campaign for the second Liberty Loan, probably to be \$3,000,000,000, is announced by Secretary McAdoo to begin October 1 and probably to close November 1. Details of the loan will be given out by the government as soon as Congress has passed the bond bill now pending.

As in the previous loan, the general direction of the campaign in each federal reserve district will be under the supervision of the Federal Reserve Bank of that district as the fiscal agent of the government, and all existing and proposed Liberty Loan committees are urged to perfect their organizations and get in touch with the Federal Reserve Bank of their district at once.

While it is certain that the rubber industry will make another creditable showing, it is earnestly hoped

that additional organized efforts, like that so successfully carried out in New England, will be undertaken throughout the various rubber centers of the country for furthering this great service to the nation. Rubber companies can perform a highly patriotic act in urging upon their employes the desirability of buying Liberty Loan bonds as a form of weekly or monthly savings, and banks in every community will be glad to cooperate in assisting them to finance the deferred payment plan so successful in the first campaign.

BRITISH LABOR AND WAR PROBLEMS.

HOW Great Britain has met the grave problems of labor in war-time is a matter of great concern to the rubber and all other industries in America, for should the world war long continue the United States will also be called upon to meet like problems here. Once in the struggle, England quickly awoke to the fact that if the army and navy were to be adequately munitioned and supplied, large numbers of men at home must be transferred from unimportant to essential industries, and that such men could not continue to work in strict accordance with established trade union rules. These restrictions upon labor made it impossible to produce the quantities needed, or to employ unskilled labor, particularly women, on many kinds of work, although women were eager to replace men wherever possible.

Organized British labor stood solidly behind the government, however, and an arrangement was soon effected whereby union rules were set aside for the period of the war and a guaranty of no stoppage on government work was given, on condition that no unnecessary changes were to be made and that capital was to receive no advantage over labor, profits being limited to 20 per cent with an additional 8 per cent for increased capital or output, and wages being controlled by government tribunals. As a result, men between the ages of 18 and 61 may not be employed in certain lines of business; strikes are not lawful in certain classes of plants, aggregating more than 5,000; and wage increases may be asked only to offset increased cost of living. More than 1,500,000 women are now doing men's work with the understanding that available men shall have the preference, that men shall be re-employed on their return from the war, and that meanwhile the wage standard shall not be reduced, the minimum rates for men also applying to women. Restrictions upon individual output, working hours and the training of unskilled labor have also been set aside. Sunday work is not required, and a reduction of hours in plants where 10, 12 and 14 hours a day had been the war-time schedule is now strongly recommended by an investigating commission.

Under the present agreement between government and labor, complaints are to be heard and adjusted by the Ministry of Munitions, but a violation of the funda-

mental war-time rules constitutes an offense under the Munitions of War Act. All persons are forbidden to employ any man within six weeks after he has left work, unless he has a "leaving certificate" from the last employer stating that he left with the employer's consent. Those engaged upon certain classes of munition work are forbidden to induce workmen to enter their employ by offering increased wages, or to bring workmen from a distance of more than ten miles. Such manufacturers are supplied by the Board of Trade Labor Exchange from the Volunteer-Industrial Reserve, a body of thousands of men and women who have enrolled for factory work of any sort wherever needed, and who receive, in addition to wages, a subsistence allowance from the government while living away from their families. Battalions of dock laborers have also been organized under army administration to assist in unloading ships wherever needed, and while at work receive the regular stevedore's wages in addition to army pay.

Thus it has been the policy in England to seek and rely upon the close co-operation of organized labor. American business must do likewise, and there is reason to believe that American labor will prove quite as patriotic and fair minded as British.

THE CONTROL OF RUBBER PRICES.

IT is a well-known fact that many Englishmen argue with equal fervor against American business combinations and for the protection of the abnormally high profits of their own rubber-producing monopoly. The following paragraphs which appeared in "Truth," London, May 16, typify the opinion of many British plantation shareholders:

For years it has been obvious that closer combination is necessary, and now that curtailment of shipping facilities compels consideration of the matter, it may be hoped that the Rubber Grower's Association will so deal with the problem as to prevent the accumulations of stock in the East.

It is beyond dispute that the plantations would benefit if some of the older areas were rested and if the tapping of young trees were deferred. It is no less clear that selling prices can be so regulated as to protect the profits of the producing companies. In fact it is not too much to say that if the Rubber Grower's Association makes full use of its present opportunities it can effect so strong a combination among growers that it would be no very difficult matter to maintain the price of rubber at 3s. per pound for the next five years.

ONE OF OUR AMERICAN CONTEMPORARIES, in referring to rubber planting, speaks of Herbert Wright, "who in 1834 suggested that it would be profitable to plant some of the best species of rubber-producing trees in the East and West Indies." The suggestion bears the marks of maturity, and were he, say, 20 years old at the time, his age at the present writing would approximate 103 years. Mr. Wright does not look it, nor does his literary and scientific work show any signs of this great age.

What I Saw in the Philippines—IV.

By the Editor of *The India Rubber World*.

Little Known Mindanao—Basilan, the Rubber Island—By Cutter and Horse to the Plantation—Cogon Grass and the Patani Bean—Ceara and Hevea on Basilan—Dr. Strong, the Pioneer Hevea Planter—Some Tapping Records—Interesting Planting and Comparative Growth Records—Estimate as to Future Yields—Rainfall at Isabela—A Word as to the Natives.

JUST to find out what the average American knows of our Far Eastern possessions I sounded several for information. Taking Mindanao for a subject, I learned that "it was in Manchuria," "a Philippine city," "a South Sea Island," and one did not know that it existed at all. This is perhaps not surprising, for it was not in their line and did not enter in any way into

It was shortly after daybreak when the steamer hove to off Zamboanga and I was transferred to a waiting launch that was later to take me over to Basilan Island. The friendly forethought of Governor Carpenter provided the launch, and the only producing *Hevea* plantation in the Philippines was my objective. After a half-hour ride across the strait that happened



MANAGER'S HOUSE, BASILAN PLANTATION CO.



TYPICAL STREET SCENE.

their business. That is why I wish to emphasize the fact that Mindanao is a huge island, a tropical empire, possessed of great mountains, vast plains, fertile valleys and big rivers. Its 36,000 square miles could comfortably accommodate the whole American rubber trade and have room enough for the cotton men in addition. It is far away to the south, about down to Borneo, and has soil and climate to grow all of the rubber we use, together with the cacao, the coconuts and a lot of other necessary and valuable tropical products.

The few white men there are fine, self-reliant, progressive men who are in a state of chronic amazement that the folks back home don't get wise to the marvelous opportunities lying open to their hand. As for the natives, they are friendly and thoroughly content with the American administration.

Close to Mindanao is the island of Basilan, with a protected harbor, in which is the thriving town of Isabela. It is further notable as being the place where the beginnings of *Hevea* culture have early borne fruit.

to be as smooth as a mill-pond, we entered a narrow water way, on one bank of which is the busy sawmill town of Isabela. There I was met by the plantation manager who had provided horses, and after a brief ride we reached headquarters. By that time it was hot, the delightful, still, moist, gummy heat of the real tropics. The rest of the day we spent in traversing the plantation paths, examining the trees, the tapping and the bark

renewal, hunting for signs of disease (but finding none) and discussing labor, tapping systems, soil and everything that *Hevea* planters are interested in. Then just before starting back to Isabela we went over the coagulating plant and the drying house. What I saw as a whole would compare favorably with good planting anywhere. There



CLEARING THE LAND.

were, to be sure, some "outs." For example, in one section the fast-growing Cogon grass had gotten ahead of them and the ground was thickly covered. They were discouraging its growth by rolling it down with heavy wooden rollers drawn by splendid hump-backed oxen. This section will soon be planted with Patani bean which will kill the Cogon.

Of course, the value of cover crops has always been granted by rubber planters, but when labor is plentiful and cheap, clean



FOUR-FAMILY LABORER'S HOUSE, BASILAN.

weeding has been the rule. Of the plants suggested, the cow pea and the velvet bean have seemed to be the favorites. The Philippine Patani bean, however, in some respects appears to be the best of all. It is a fast grower and chokes out weeds and Cogon grass very effectively. It is also good for three years



FILIPINO AND YAKAN BRINGING IN LATEX.

without replanting. On the other hand, the bean, while edible, is not particularly appetizing and is not sought for food purposes. Later I saw much of it, and take it all in all, it is hard to beat as a grass killer.

For nearly fifteen years there had been sporadic attempts at



TAPPERS—FRONT ROW, YAKANS, REAR, FILIPINOS.

the cultivation of rubber on Basilan Island. Unfortunately, for a time the chief interest centered about Ceara rubber, with some attention paid to *Castilloa* and a very little to *Hevea*. Thus, in 1909, Carl F. Miller had a considerable planting of Ceara which grew exceedingly well. These trees were tapped when they were $3\frac{1}{2}$ years old and about 8 inches in diameter. The result was about $\frac{1}{2}$ ounce of rubber per tree.

Another Ceara planter was F. T. Winters, who planted Ceara



PLOWING OUT COGON GRASS.

in 1906. While the trees grew well, it was not found profitable to extract the latex from them.

Incidentally, it might be noted here that the Basilan Plantation Co. began with *Castilloa*, which grew wonderfully, but when its relatively unsatisfactory product was discovered, it was abandoned entirely in favor of *Hevea*.

The history of the Basilan plantation is of much interest. It dates back to 1905, when Dr. J. W. Strong, of Zamboanga, acquired some 115 acres, part of which had been cultivated and upon which there were some coconut trees planted by the natives. At the outset he began the cultivation of Ceara rubber interplanted with hemp. In 1907 the first planting of *Hevea* trees was begun, but it was more as an experiment than anything else. A



ONE YEAR OLD RUBBER, BASILAN.

year later more *Hevea* trees were added. In 1911 the Basilan Plantation Co. was formed to take over Dr. Strong's holdings. The proposition had been put up to a wealthy German house, Behn, Meyer & Co., with long experience in tropical ventures, but it was turned down. It was taken over, however, by individuals resident in the Philippines—Swiss, Germans and Americans. With more capital, additional land, some 1,000 hectares, was acquired from the government, and *Hevea* rubber and coco-

nuts, especially the former, planted on a considerably larger scale. The new land was jungle, exceedingly rich and well drained.

The first real tapping took place in 1915. The number of trees tapped was 14,650 and the product was 12,932 pounds, which was excellent. As is always the case when trees come into bearing, the tapping cost was high, being about 32 cents a pound. Rubber was low when the product was marketed, and the price paid was 51 cents a pound.

In 1916, however, the production was 32,982 pounds at a cost per pound a trifle less than 24 cents for collecting, the rubber being marketed at 61 cents a pound.

At the time of my visit 32,000 trees were being tapped and the estimated yield of 51,000 pounds had already been exceeded. It is interesting to note that both for 1915 and 1916 the plantation showed a profit, an even better one than was expected. Nor is there any reason to doubt that as the 70,000 trees come into bearing and mature, profits will be greatly increased and costs lessened. These figures of increase which the company has prepared are exceedingly conservative and are largely exceeded each year. They are:

ESTIMATE OF YIELD OF FOUR TO TWELVE YEAR OLD TREES.

0.60 pounds for trees	4 years old.
1.19 pounds for trees	5 years old.
1.50 pounds for trees	6 years old.
2.03 pounds for trees	7 years old.
2.91 pounds for trees	8 years old.
3.63 pounds for trees	9 years old.
4.17 pounds for trees	10 years old.
5.06 pounds for trees	11 years old.
6.22 pounds for trees	12 years old.



FIVE AND A HALF YEAR OLD RUBBER, BASILAN.

On Basilan Island alone, there is room for scores of *Hevea* plantations as large or larger than that of the Basilan Plantation Co. The soil, climate and rainfall are ideal. The harbor of Isabela gives easy access, the people are quiet and honest,



THREE YEAR OLD RUBBER, BASILAN, SHOWING PATANI BEAN COVER.

plenty of labor can be secured from the nearby island of Cebu, and as there are already thousands of *Heveas* installed, seed may be obtained almost at one's door.

In this connection, it may be interesting to note the comparative costs of bringing land into cultivation for rubber in the Philippines as compared with the present rubber producing countries. The figures representing the cost per acre are as follows: \$50.94 in the Philippines; \$73.60 in Sumatra; \$109.94 in Java, and \$137.42 in Federated Malay States.

The upkeep per acre costs \$18 in Moro Province; \$20.00 in Sumatra; \$23.00 in Java, and \$29.00 in Federated Malay States.

As to planting and growth, the following figures taken from the company's records, are significant:

Planted in the year:	Rubber.	
	Acreage.	Trees.
1910.....	51.9	8,920
1911.....	169.35	21,019
1912.....	34.7	3,848
1913.....	57.6	7,160
1914.....	12.5	1,871
1916.....	228.585	30,282
	554.635	73,100

It is interesting to note from the above table that 171 trees to the acre were planted in 1910; 124 trees in 1911; 110 trees in 1912; 124 trees in 1913; 149 trees in 1914, and 132 trees in 1916.

The annual growth of the trees, according to official measurements recorded by the company, is shown on the next page.



A PHILIPPINE SAWMILL AT BANGO.

Block No.	Planted in year:	Circumferential Growth in the Year After Planting.			
		Third Year.	Fourth Year.	Fifth Year.	Sixth Year.
2	1910	6.175	5.48	4.33	4.93
6	1910	6.175	6.65	.....	.....
9	1911	5.2	6.75	4.85	4.65
10	1911	4.85	6.15	5.45	.....
11	1911	4.35	5.95	5.65	.....
13	1911	5.15	6.6	5.5	.....
15	1911	4.75	6.25	5.5	.....
18	1913	7.2	6.1	5.9	.....

According to the above figures the average circumferential growth of the plantings of 1910 in Block No. 2, for the fourth, fifth and sixth year was 4.91 inches, while the trees planted in the same year in Block No. 6, averaged a growth of 5.41 inches during the same period. The 1911 plantings in Blocks No. 9, 10, 11, 13 and 15 showed an average growth of 4.9 inches for the third; 6.19 inches for the fourth and 5.6 inches for the fifth year. That the estimate of yield, which I copied from the same records, will be greatly exceeded, there is but little doubt.

1917	pounds	51,000
1918		74,814
1919		101,333
1920		127,171
1921		165,812
1922		209,515
1923		243,972
1924		270,049
1925		296,042
1926		315,668
1927		330,381
1928		354,637
1929		386,253

The rainfall as far as known is always more than 90 inches. According to the Weather Bureau at Isabela the rainfall there for 10 years was:

	Annual m.m.	Number of rainy days.
1903	1,659.9	156
1904	1,885.9	143
1905	1,103.	112
1906	1,811.1	144
1907	2,032.9	173
1908	2,220.	186
1909	1,970.6	184
1910	2,327.2	205
1911	1,539.6	123
1912	1,529.	129
1913	1,759.1	139
	1,794.1	153.1

The humidity is considerable, resulting in heavy dews which in effect are equal to gentle showers. The record of rainfall at the Basilan Plantation also shows a yearly average of over 100 inches, exceedingly well distributed.

According to the agricultural survey of this island, on file in the office of the Superintendent of Schools, at Zamboango, there is not only much alluvial soil in the river valleys suitable for any sort of agricultural enterprise, but thousands of acres of gently rolling plateau land that runs from 200 to 250 feet above the level of the sea. Much of this has a layer of rich brown loam resting upon a surface of reddish clay. The soil contains a certain percentage of "friable small laterite which breaks in the hand and is decomposed easily and breaks up when the soil is cultivated." The report also says that this soil must be of great depth, as proved by the heavy growth of trees that it bears.

As to the natives, they are Moros, locally known as Yakans. There are also some Visayans, a few Filipinos and some Bajans. They are all, except the Bajans, who are fishermen, small agriculturists, raising rice, sorghum, cassava and fruits. But be he Moro, Visayan, Tagalog, or any other, unless it be perhaps Negrito, he quickly becomes an expert tapper. At Basilan the day's work for one man is 400 trees. A close scrutiny of the surfaces tapped showed almost without exception clean paring and in only a few instances was there a ragged or too deep incision.

(To be continued.)

MISCELLANEOUS EASTERN NOTES.

Recently an *Hevea* fruit containing seven kernels in seven separate husks was picked on the Kiara Pajoeng Estate.

Freights from the Dutch East Indies to New York have been raised 10 per cent.

The rubber factory of the Way Halim Estate, near Tandjong Karang, in South Sumatra, has been destroyed by fire.



GROUP OF YAKANS.

War News of the Rubber Industry.

Service Personnel—The Botanical Raw Products Committee—War Work of the Underwriters' Laboratories—Transportation Priorities—Ocean Freight Rate Control—Food, Fuel and Raw Material Conservation—Speeding Up Factory Communication—The Draft in Akron—Workers to Repair Gas Masks—Labor Unrest and Possible Remedies—Caring for the Families of Fighters—The Reconstruction of Wounded Soldiers.

RUBBER men are not only co-operating with the government in the matter of furnishing supplies at low prices and helping with their money by purchasing bonds, but they are also contributing what is far dearer, their own flesh and blood. Many scions of leading rubber men are enrolled among the young fighters now, or soon to be, on the firing line.

Russell G. Colt, son of Colonel Samuel P. Colt, president of the United States Rubber Co., after service in the regular army at Sackett's Harbor, was transferred to the American Field Service in France, where he is now driving an ambulance for the French Government, though this unit of the French army, composed entirely of Americans, is about to be taken over by the United States Government.

Homer E. Sawyer, vice-president of the United States Rubber Co., has a son in active service in France.

Harry E. Converse, president of the Boston Rubber Shoe Co., has two sons, Elisha E. Converse, ensign in the navy, and Parker Converse, also in the navy, and both are on their way to France at the time of writing.

Donald T. Hood, in the Harvard Unit hospital corps, in France, is the son of Frederic C. Hood, vice-president and general manager of the Hood Rubber Co.

Henry Leland Ryder, orderly for Brigadier General Peter E. Trent, 51st Infantry Brigade, is the youngest son of Frederic T. Ryder, well known through his long connection with the United States Rubber Co.

J. Fred Seiberling, oldest son of F. A. Seiberling, president of the Goodyear Tire & Rubber Co., about twenty months ago enlisted as a private in Battery B, Ohio National Guard, and in July was advanced from corporal to second lieutenant, through promotions resulting from the creation of a complete regiment of artillery.

Joseph J. Johnston, who got a captaincy at the same time, is the son of W. A. Johnston, president of the Rubber Products Co., Barberton, Ohio, and W. A. Snow, similarly promoted, was an engineer at the Goodyear plant.

John J. Banigan, grandson of Joseph Banigan, founder of the Banigan Rubber Co. and the Woonsocket Rubber Co., is serving with the First Hundred of aviators.

Gilbert H. Gleason, son of Wm. H. Gleason, secretary of the Revere Rubber Co., is in the First Troop of Cavalry, Massachusetts State Guard, soon to be mustered into the United States service.

Major Joseph M. Rector, a director and member of the executive committee of the Sterling Tire Corporation, is now of the regular army and has been actively in the field with his regiment for several months past. Summer before last he devoted to the Mexican border campaign.

THE BOTANICAL RAW PRODUCTS COMMITTEE.

India rubber and vegetable fibers come within the scope of the investigations now being conducted by the Botanical Raw

Products Committee of the National Research Council, acting as the department of science and research of the Council of National Defense. It will be recalled that the National Research Council was organized in 1916 by the National Academy of Sciences at the request of President Wilson, the object being to co-ordinate the scientific resources of the country through the active co-operation of all agencies having research facilities, including universities, industrial laboratories, etc. The Botanical Raw Products Committee, a body of eight scientists under the chairmanship of E. M. East, professor of experimental plant morphology, Harvard University, has the co-operation of many other scientists in all parts of the country, including several of the best known rubber chemists, and is acting as a clearing house where manufacturers using raw products of a botanical nature may obtain information regarding them. Rubber problems, primarily chemical, are referred to the Chemistry Committee of the National Research Council, while questions not so referred are handled by Arthur D. Little, engineering chemist, and C. R. Boggs, of the Simplex Wire & Cable Co.



RUSSELL G. COLT.
NOW SERVING IN FRANCE.

WAR WORK OF THE UNDERWRITERS' LABORATORIES.

The activities of the Underwriters' Laboratories in connection with rubber equipment for war work are shown by the monthly bulletin, dated September 15, stating that inspections and test work have been completed at ten factories, which have produced over 1,000,000 feet of lead covered cable for the navy. Inspections and tests are now being conducted at twenty factories of an output to total 30,000,000 feet of No. 14 rubber covered wire, principally for cantonments. At eleven factories, inspections and tests are nearing completion on an output totaling 420,000 feet of cotton rubber lined fire hose for the protection of cantonments and other government properties.

TRANSPORTATION PRIORITIES.

A recent amendment to the Interstate Commerce Act authorizes the President of the United States for the duration of the war, should it become necessary, to direct that such shipments of commodities as, in his judgment, may be essential to the national defense and security, shall have preference or priority in transportation by any common carrier by railroad, water or otherwise. This authority the President has delegated to Judge Robert S. Lovett, whose first official act was to invoke his power of traffic regulation to relieve the Great Lakes bituminous coal situation.

Fair minded business men, who may at some time apply for preferential shipments under the terms of this act, will realize the likelihood of their applications being considered with due regard to the manner and extent to which they are contributing to the national defense and security. Decisions, based to a degree upon a manufacturer's standing on government contract deliveries and his attitude toward supplying the government at fair prices, will be regarded as equitable and to be expected.

OCEAN FREIGHT RATE CONTROL.

The rubber industry, which watches shipping developments with interest, will welcome the fact that the Shipping Board has established a chartering commission and is urging a reduction of 65 to 75 per cent in freight rates charged by American vessels. Thus does the commandeering of American merchant vessels and governmental regulation of ocean freights loom in the offing, and as a result of export and bunker coal control, the likelihood also of an early joint rate schedule to which neutral and allied nations will be party.

Present freight rates range from \$17 to \$18 a ton. The new rates will vary and in some instances, it is said, may run as high as \$13, but the general level will be far lower. The decision to give the Shipping Board representation on the Exports Council will greatly strengthen its control over shipping.

It is eminently fitting that ocean traffic should be brought under governmental supervision. Ships are as much a part of the nation's transportation system as railways, and concern vitally not a few citizens but everybody. The United States government started insuring our vessels soon after the outbreak of the war. Since our entrance, the government has provided our merchant ships with convoys, guns, gun crews and wireless operators, and is training officers for the merchant marine. More important still, it has commandeered shipyards and gone into the shipbuilding business itself.

In short, the government has protected shipping as far as possible from losses and left the profits to go where they would. Now it is very properly proposed that we follow the policy of Great Britain and treat these profits as a part of our national household economy; for, over and above a fair return on the capital invested, they are no longer exclusively a private affair. As our ships carry men, money, food materials and manufactured goods for purposes which affect the well-being of the whole people, the profits from this ocean-borne traffic are properly of public concern.

Shipping has become more than a public interest of any one nation or group of nations. It is a symbol of that new internationalism of common interests which is being created by the war and which the coming of peace will not terminate. The freedom of the seas must in future years imply freedom from competitive chaos.

FOOD, FUEL AND RAW MATERIAL CONSERVATION.

When the first Liberty Loan was offered to the public, rubber workers, from company presidents down to errand boys and sweepers, welcomed the opportunity for financial assistance to their country. Another opportunity for personal service, now being presented by Food Administrator Hoover, is no less potent if less obvious.

Increased consumption, waste and impaired production in beligerent countries are exhausting the world's reserves of food and raw materials necessary to win the war, and a great campaign is in progress to conserve food, fuel, power and transportation. This can succeed only by the co-operation of every man, woman and child in America. Each must be made to feel that he is not alone in his efforts and that his individual econ-

omies and self-denials will help the great cause. Employers, factory superintendents and managers should, therefore, take the lead and encourage reasonable economy as a patriotic duty on the part of those under their direction. A statement of what the entire factory force could accomplish by signing and living up to the Hoover food pledge will dignify it far beyond the individual appeal and put the spirit of team work back of a trifling personal sacrifice, which produces enormous results in the aggregate.

Considerable saving in rubber mills can be effected by utilizing, wherever possible, articles that are plentiful instead of those that are scarce, and innumerable opportunities exist for the economizing of fuel, power and transportation by ingenious new processes, better management, etc. Operatives often see such opportunities in their routine work and should be encouraged to make them known, ideas of value being suitably compensated for. Not only do such economies save unnecessary expense on the part of the employer and reduce the selling price of his product, but they tend to reduce the demand upon transportation facilities now taxed and needed as never before.

As these economies are intended for the common good rather than individual gain, they should become the common property of the industry, and THE INDIA RUBBER WORLD gladly offers its space as a clearing house for the dissemination of such information.

SPEEDING UP FACTORY COMMUNICATION.

Bicycles and roller skates, long regarded as recreation facilities, are now being utilized for business purposes indoors. Increased production in essential industries is the greatest need of the times, and it depends in no small measure upon the prompt distribution of mail, orders and other written information, among the various departments. In the great factories of the Remington Arms United Metallic Cartridge Co., messenger boys, equipped with shoulder bags and riding on bicycles or roller skates, have cut down amazingly the former time of delivery due to long distances. The idea seems worth a trial in large rubber mills where passageways are wide enough to permit.

THE DRAFT IN AKRON.

Akron's loss in rubber workers from all factories, as a result of the calling of the first quota of drafted men to the colors, will total about

1,500. Comparatively few industrial exemption claims have been made. Most of the positions made vacant have either been filled by new men, or by girls in work where strength is not required.

WORKERS TO REPAIR GAS MASKS.

The Army Medical Department, charged with the duty of supplying gas masks and other appliances to protect United States troops against asphyxiating and poisonous gases used in warfare, is organizing a Gas Defense Service, including the necessary overseas repair sections for work abroad.

Men registered for the draft and already called for physical examination may be assigned to the Gas Defense Service if they have special qualifications. Those who are found qualified will be enlisted in the Sanitary Corps for the duration of the war, with the probability of service abroad in the near future.



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The kite balloon has proved an effective arm against submarines and our warships are now equipped with these air scouts that are towed along with the ship, giving timely warning of impending danger.

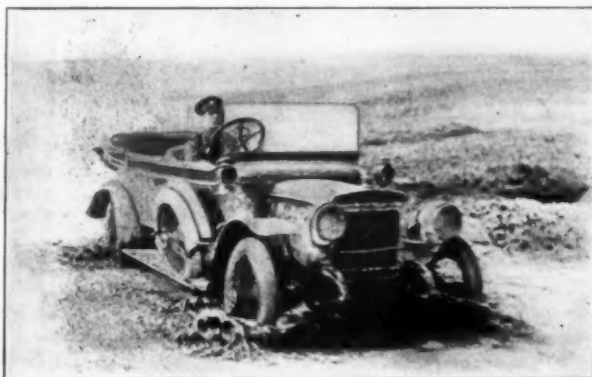
The pay is from \$30 to \$44 a month, plus \$3 to \$7.20 a month for foreign service according to grade; and food, shelter, clothing, transportation, and medical care are provided by the government in addition.

Applicants for enlistment for this service should write to or call upon the officer in charge, Overseas Repair Section No. 1, Gas Defense Service, at Room 139, new Interior Department Building, Eighteenth and F streets N.W., Washington, D. C.

LABOR UNREST AND POSSIBLE REMEDIES.

The feeling grows that labor bodies may not abide by the recommendation of Samuel Gompers, president of the American Federation of Labor, and a member of the Advisory Commission of the Council of National Defense, that unions should not insist on changing labor standards during the war. Early in September, therefore, the National Industrial Conference Board, consisting of 16 manufacturers' associations, including the Rubber Association of America, and representing more than 50,000 firms, proposed to the Council of National Defense a joint agreement between employers and employes for the duration of the war to prevent strikes and lockouts, compel maintenance of prevailing open or closed union shop conditions and establish a board of compulsory arbitration of labor disputes directly concerning war production.

While this proposal is in some respects unacceptable to the American Federation of Labor, it is believed that much can be accomplished through the American Alliance for Labor and



Underwood & Underwood, N. Y.

From a photograph taken "somewhere in France," showing the shell-devastated country and road conditions that rubber tires are expected to contend with.

Democracy, which was organized in August with the approval of President Wilson, and is composed of the nation's labor leaders. Its double purpose is to crush disloyalty and to solidify labor in the war for democracy. At a big loyalty conference of this new body, held in Minneapolis, Minnesota, September 7, Samuel Gompers was chosen as its leader and a declaration of principles was adopted embracing the following outstanding features:

- Suppression of disloyalists and pro-German propagandists.
- Solidification of labor behind the government.
- Conscription of wealth as well as men.
- Heavy taxes on incomes, excess profits and land values.
- Government control of industries in cases of labor dispute.
- Action against speculative interests which enhance prices of necessities of life.
- Insurance for soldiers and sailors.
- Equal suffrage.
- Endorsement of President Wilson's decision not to permit the war to be made an excuse for lowering labor standards.
- Declaration that wage-earners must have a voice in determining conditions under which they give service, and must also be repre-

sented in councils conducting the war and at peace negotiations.

American labor leaders appear to be showing the right spirit, as evidenced by the address of Mr. Gompers at the meeting of the National Security League in Chicago, Illinois, September 14, when he pledged labor to fight until world terrorism had been overthrown. It remains to be seen if the rank and file will follow the leader. Certainly some equitable means must be found to terminate the present labor unrest and insure unremitting production of war necessities.

CARING FOR THE FAMILIES OF FIGHTERS.

The government is undertaking the principal burden of caring for the dependents of soldiers and sailors of the United States, and intends to do so better than any other nation. As a substitute for the present pension law, the administration bill now pending, and almost certain of passage, contains allowances that seem fair and calculated to meet average circumstances. Together with allotments of soldiers' and sailors' pay, they make it possible for dependent families to maintain the American standard of living, while the insurance feature provides a means of rehabilitation for wounded men on their return from the war and protects dependent families wherever service results in the death of the fighter.

For the purpose of determining the rates of allowances from the government to families, the bill separates all dependents into two classes—A, including wife and children, and B, other relatives. The government allowances, payable monthly, are as follows:

Class A.		Class B.	
Wife, no child.....	\$15.00	One parent.....	\$10.00
Wife, one child.....	25.00	Two parents.....	20.00
Wife, two children.....	32.50	Grandchild, brother, sister, and additional parent (including grandparents)	5.00
No wife, child.....	5.00		
No wife, two children..	12.50		
No wife, three children..	20.00		
No wife, four children..	30.00		
For each additional child	5.00		

For the purposes of this section the bill provides an appropriation of \$141,000,000.

When service results in death, provision is made for a monthly compensation based upon the amount of pay received, as follows:

	Percentage of pay	Minimum
Widow	25	\$30
Widow, one child.....	35	40
Widow, two children.....	40	50
Additional children (up to two).....	5	5
No widow, one child.....	20	15
No widow, two children.....	30	25
No widow, three children.....	40	35
Additional children (up to two).....	5	10
Widowed mother.....	20	25
Maximum monthly compensation for death		200

The bill provides that payment of compensation to the widow or widowed mother shall continue until two years after remarriage or death; to children, except in the case of incompetents, until reaching the age of eighteen, or until marriage.

In case of total disability the following monthly compensation from the government is provided:

	Percentage of pay	Minimum
No wife, no child.....	40	\$40
Wife, no child.....	50	55
Wife, one child.....	55	65
Wife, two or more children.....	60	75
No wife, one child.....	50	50
Additional children (up to two).....	5	10
Widowed mother.....	10	10

For the payment of compensation, appropriation of \$12,150,000 is provided.

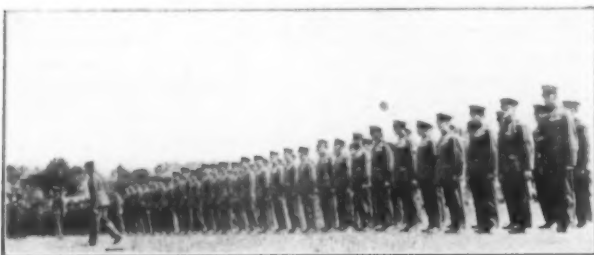
For the purpose of securing still broader protection, both for themselves and for their dependents, men enrolled in the military and naval service, under the provisions of the pending bill, may obtain insurance against death or total disability for amounts ranging from \$1,000 to \$10,000, with premium rates based upon the American Experience Table of Mortality and interest at

3½ per cent. In other words, the premiums paid will be based upon actual cost of the insurance under peace conditions and the extra risk due to war will be assumed by the government. For this purpose the bill provides the sum of \$23,000,000, to which all payments on account of premiums would be added.

THE "RECONSTRUCTION" OF WOUNDED SOLDIERS.

The Surgeon-General of the Army, Maj. Gen. William C. Gorgas, announces that governmental responsibility for caring for the wounded no longer ends with the return of the soldier to private life with his wounds healed and such pension as he might be given. It is now considered also the duty of the government to re-equip and re-educate the wounded man, and to return him to civil life ready to be as useful to himself and his country as possible.

To carry out this idea, plans are well under way for building "reconstruction hospitals" in large American centers of population. Each will be built as a 500-bed hospital, but with



Review of the Flying Squadron at the Field and Track Meet of the Goodyear Tire and Rubber Co., Akron, Ohio.

provision for enlargement to 1,000 beds if needed. When the soldiers are able to take up industrial training, further provision will be ready. The injured man may be retrained to his previous occupation to conform with his handicapped condition, or trained for a new industry compatible with that condition. Additional education will be given to those fitted for it, and men may, in some cases, be returned to more valuable work than that from which they were called to war. Workshops will be provided at the hospitals, but arrangements will also be made with outside industries whereby more elaborate methods of training may be carried on. An employment bureau will be established to place men so trained in different parts of the United States. This whole matter comes under the department of military orthopedic surgery (the prevention of deformity), recently organized in the Medical Department of the Army.

GOVERNMENT PLANS WAR SAVINGS BANK.

Every man, woman and child in America, no matter how small his means, is to have the opportunity to do something to help the Government. Every town and city in the country will have on sale soon a share of the two billion dollars' worth of war savings certificates just authorized by Congress. Secretary McAdoo has announced that certificates in denominations as low as \$5, bearing 4 per cent interest, and maturing in five years, will be issued in blocks from time to time, beginning as quickly as plans can be completed. The treasury, sub-treasuries, internal revenue, customs, post offices and other agencies will be designated to make sales.

Savings may be made through the purchase of stamps of small denominations, which can be carried in books issued for the purpose and accumulated until a sufficient amount has been saved to purchase a war savings certificate. The government will redeem these war savings certificates at any time before maturity upon request of the holder, allowing interest at a less rate than 4 per cent.

THE RUBBER TRADE ROLL OF HONOR.

Reported by the Rubber Association.

Numbers in parenthesis following individual names indicate branches of service as shown by the key list.

BOSTON BELTING CO., BOSTON, MASSACHUSETTS.

F. W. Wright (1)	F. Harris (4)
G. R. Akers (1)	A. L. Holmes (5)
W. D. Manson, 2nd Lieut. (2)	J. C. Callard (4)
A. W. Davis (3)	H. V. McInerney (6)
K. A. McKenzie (2)	R. W. Hay (3)

THE R. F. GOODRICH CO., AKRON, OHIO.

Geo. W. Hamm (7)	Geo. W. Young (10)
E. J. Davis (8)	Louie W. Guibord (4)
Walter J. Nally (9)	

GOODYEAR'S METALLIC RUBBER SHOE CO., NAUGATUCK, CONNECTICUT

Albert Sumpf	Edmund Bowler
Walter Goodwin	Everett Coleman
Stanley Rikoski	Patrick Falvey
Ernest Johnson	Stanislaw Moskowsky
George Lawson	Carl Olson
David Ostrom	Harold Wheeler
Thomas Truestrail	William Painter
Willard Hicks	Jacob Boher

KEY TO BRANCHES OF SERVICE.

- (1) Coast Artillery.
- (2) U. S. Infantry.
- (3) Heavy Artillery.
- (4) Medical Reserve Corps.
- (5) Drafted.
- (6) New York Cavalry.
- (7) New York National Guard.
- (8) Truck Driver, Quartermaster's Dept.
- (9) Provisional Training, Plattsburg.
- (10) Naval Reserve Corps.

WAR CONVENTION OF BUSINESS MEN.

A SPECIAL war convention of the Chamber of Commerce of the United States, held September 18 to 21 at Atlantic City, brought together a large number of men prominently connected with leading financial business and manufacturing concerns, who pledged co-operation with the government in regard to its present war requirements. Among the speakers were Secretary of War Baker; Franklin K. Lane, Secretary of the Interior; Secretary of Labor Wilson; Frank A. Scott, chairman of the War Industries Board; Herbert C. Hoover, the Food Administrator; Boris Bakhmeteff, Ambassador from the New Russia to the United States; Lord Northcliffe, chairman of the British Mission; Judge Robert S. Lovett, of the War Emergency Board, and many others.

Government price fixing of all essential products, not only in sales to the government, but to the public as well, was recommended in resolutions adopted. The convention advocated legislative creation of a general government purchasing department, which, in addition to fixing prices, would have power to distribute the output of industries in a manner most necessary to the conduct of the war; it recommended assisting the government in making purchases and the formation of a general committee of industry, representing all branches of business, which would aid the purchasing department in apportioning orders.

It was also recommended that labor standards remain unchanged and that a labor adjustment board be named to handle all major disputes. The declaration was made for industry that it endorse a policy of no lockouts or strikes while differences were before the board, and labor was urged to take a similar stand. The convention pledged the support of retail merchants to the efforts of the Commercial Economy Board to bring about economies in retail trade; endorsed the proposal by the Board of Directors of the Chamber of Commerce of the United States to send a commission abroad to study commercial conditions; advocated a plan for the payment of taxes in quarterly instalments; urged industries to call war meetings of their members; urged suspension of laws preventing foreign ships to engage in coastwise trade; urged government action to keep the American dollar on a parity with exchange throughout the world; urged business to give full support to the next Liberty Loan, and advocated an immediate increase in the number of American merchant ships.

At one session of this convention, Edward H. Huxley, president of the United States Rubber Export Co., Limited, New York City, delivered an excellent address on "Export Control by Means of Government Licenses, from the Standpoint of the Exporter," in which he justified the fundamental necessity of controlling exports by government license in time of war, and stated that exporters can find no excuse for objection to it, even though it may result in some curtailment of our export commerce or some hardships to our exporters. He asserted, however, that it is the duty of the government to exercise that control wisely, and:

To interfere no more than is necessary with our export trade, but, on the other hand, to encourage it by every means possible, bearing in mind that if we withhold our exports from neutral countries they will probably withhold their exports from us.

To encourage our export trade especially, so that trade balances may be in our favor and so that our gold reserve may be maintained and increased.

In executing the policies of control established, to act upon applications for licenses expeditiously; to issue the license to be good until used but revocable at will; not to duplicate the work being done by the other governments, but secure from them a relaxation of their control before establishing a like control to accomplish the same object; to declare our policy, in so far as possible, in order to prevent the application for license where there is no possibility of its issue.

To retain by means of prohibition an adequate supply for the use of the government and the people.

To prevent by all means any aid or comfort to the enemy; and last, but by no means least, to conserve to the best use all available ocean-going ships.

THE REVISED LICENSED EXPORT LIST.

THE Exports Administrative Board has issued revised lists of articles for which licenses are required for shipments destined to countries other than the enemy or her allies, or the neutral countries of Europe. List Number 1 includes, among others, rubber, its products, derivatives, substitutes, and all articles containing them. The second, which is a long one, contains the following: acetone, alcohol, ammonia and its salts, belting, benzene, benzine, benzol, burlap, castor oil, copper wire, cotton lint, cottonseed oil, graphite flake, gasoline, glycerine, graphite, linseed oil, corn oil, rapeseed oil, naphtha, rosin, oil, sulphate of soda, sulphur, sulphate of alumina, sulphuret of antimony, nitric acid, sulfuric acid, toluol, turpentine, crude turpentine, white lead. It is stated that additions may be made to this list if it is determined that other articles are properly included under the headings given.

ZINC OXIDE FOR THE RUBBER INDUSTRY ONLY.

A matter of special interest to the rubber industry at this time is the announcement being sent out by the New Jersey Zinc Co., New York City, mainly to the paint trade, stating that the demand for Horse Head zinc oxide has grown beyond its ability to produce, and that therefore the company cannot accept any orders from the paint trade for shipment after January 1, 1918. The reason given for this change is that it is made necessary by the requirements of the rubber industry, which is unable to use the leaded zinc oxides in its compounds. These requirements are of vital national importance in the present emergency, and as experience has demonstrated that the leaded zinc oxides can be, and are being successfully used by the paint industry, the company is forced to the above conclusion. It will be seen by this that the New Jersey Zinc Co. will in the future, as in the past, use every endeavor to serve the rubber industry to the full extent of its requirements. In order to more fully serve its customers in the paint trade, the company is adding to its producing capacity by erecting 12 additional blocks of oxide furnaces at its plant at Palmerton, Pennsylvania. These are expected to be finished about February 1, and will have a production of approximately 1,500 tons a month of leaded zinc oxide.

GOVERNMENT TINNING TEST FOR COPPER WIRE.

THE following is a copy of General Specifications No. 403-A (February 14, 1913) of a tinning test for copper wire that is issued by the United States Signal Corps:

1. Preliminary. This specification describes the standard method of test to be followed in the inspection of tinned copper wire.

The test shall be applied before the wire is insulated. In the case of stranded conductors, where the individual wires are 40 millimeters in diameter or smaller, the test shall be made after the conductor has been stranded. The test on the complete conductor to be the same as prescribed for the separate strands. The manufacturer will furnish the necessary apparatus and chemicals required.

2. Routine of test. (a) To avoid testing ends, the wire shall be bent into loops having a radius of twelve or fifteen times the diameter of the wire.

(b) Samples of the wire shall be thoroughly cleaned with ether or one of the reagents named below and immersed in hydrochloric acid of a specific gravity of 1.088, for one minute.

(c) It shall be rinsed carefully in clear water and wiped dry with clean waste or rags.

(d) It shall be immersed in a sodium sulphide solution having a specific gravity of 1.142 and containing an excess of sulphur, for thirty seconds, and wiped dry as before.

(e) This cycle of operation shall be repeated until the blackening of the wire becomes clearly visible.

(f) The number of such cycles required to produce a blackening effect shall be noted, and shall represent the measure of the efficiency of the tinning.

(g) As a mechanical test for adhesion of tinning, samples may be bent around a rod having a diameter equal to four times the diameter of the wire. Any cracking or parting of the coating will be plainly shown by one immersion according to the above test. No sample should show blackening after the mechanical test on immersion for one minute in the sodium sulphide solution only.

(h) The minimum average values that will be accepted from samples taken from any batch of wire are as follows:

Diameter of Wires.	Number of Immersions at 60 Degrees F.
From 7.5 millimeters to 48 millimeters, inclusive.....	4
Above 48 millimeters to 80 millimeters, inclusive.....	8
Above 80 millimeters, all sizes.....	16

3. Precautions to be observed. (a) All grease must be carefully and thoroughly cleaned from the wire by use of one of the following, which are given in order of preference.

Ether
Benzene
Gasoline.
Naphtha.
Caustic alkali solution.
Hot water and soap.

(b) The sodium sulphide solution must contain an excess of sulphur and should have sufficient strength to thoroughly blacken a piece of clean untinned copper wire in five seconds. Unless this solution has this effect on the clean copper wire it is not satisfactory for the tinning test.

(c) After the removal of the wire from the hydrochloric acid it should be rinsed clean before immersing it in the sulphide.

(d) The wire should be thoroughly rinsed clean of the sulphide before again dipping it in the hydrochloric acid.

4. Material required.

3 glass beakers.
1 pint sodium polysulphide solution, specific gravity about 1.142.
1 pint hydrochloric acid, specific gravity about 1.088.
4 ounces flowers of sulphur.

Contractors shall provide all necessary facilities for making tests prescribed by this specification.

SULPHUR RESERVES IN UNITED STATES SUFFICIENT EVEN FOR WAR DEMANDS.

The record of the last three years, according to a recent statement issued by the United States Geological Survey, shows that this country has enough sulphur to support its present industries, even under the requirements imposed by the drain of a vast foreign demand. The two main sources of sulphur are the native mineral and the sulphides. Each year at least 300,000 long tons of native sulphur and 1,250,000 long tons of sulphides are used, mostly for making sulphuric acid.

Leading Position of Rubber in United States Commerce.

AN accurate index to the importance and rapid growth of our rubber industry is graphically told by the import and export statistics for the fiscal year ended June 30, 1917, published by the United States Department of Commerce. The imports of india rubber for the year were 333,373,711 pounds, value \$189,328,674, an increase of nearly 20 per cent over the previous year, when 267,775,557 pounds, value \$155,044,790, were imported. The average value per pound for 1917 was 56.7 cents, compared to 57.9 cents for 1916.

The greater part of the india rubber imports for 1917 was direct shipments from the Far East, the British East Indies supplying 136,404,168 pounds, value \$76,986,051, and the Dutch East Indies 45,027,410 pounds, value \$27,239,501. In 1916 the imports from British possessions were 105,240,104 pounds, value \$63,487,149, and from Dutch possessions 20,291,963 pounds, value \$11,605,793. These imports are all practically what is known as plantation rubber. Considering that imports from the Dutch East Indies in 1917 were double those of 1916, the growing importance of this new source of supply may be realized.

Imports of india rubber from the United Kingdom—and that means London and Liverpool—for 1917 were 78,742,217 pounds, value \$51,851,269, compared to 72,459,408 pounds, value \$48,144,416 in 1916, an increase that does not support the effectiveness of Germany's submarine campaign.

Brazil has done a little better this year, having sent us 56,818,966 pounds, value \$25,654,924, as compared to 54,968,227 pounds, value \$25,150,493 for 1916. The balance of our india rubber imports has come by the way of Portugal, Mexico, Central and South America and other countries, and shows but little change from the imports of last year.

Next in importance are the imports of gutta jelutong, or Pontianak, as it is commonly called, amounting to 23,376,389 pounds, value \$1,044,022 for 1917, compared to 27,858,335 pounds, value \$1,322,262 in 1916. Pontianak has always been duty free, but from July 1, 1916, a 10 per cent tax was imposed that, in connection with the eastern shipping situation, explains the decrease of 4,481,946 pounds in the 1917 imports. A recent decision by the United States General Appraisers classifies Pontianak as crude rubber and duty free.

Balata shows a gain, 3,287,445 pounds, value \$1,649,452, having been imported in 1917, against 2,544,405 pounds, value \$996,102 for 1916.

There is practically no difference in the imports of guayule for the past two years, the figures for 1917 being 2,854,372 pounds, value \$764,484, compared to 2,816,068 pounds, value \$880,813, for 1916. That the Mexican situation has almost ruined this industry is evidenced by the normal imports of 1911-12, that amounted to 14,238,625 pounds, value \$6,463,787.

Gutta percha comes exclusively from the Far East, where shipping has been greatly restricted during the past year, when 2,021,794 pounds, value \$332,223, were imported, compared to 3,188,449 pounds, value \$342,226, for the previous year.

Rubber scrap imports for 1917 were 20,517,328 pounds, value \$1,569,448, compared to 16,371,573 pounds, value \$1,271,903 in 1916. This is not far from normal, as 26,293,192 pounds, value \$2,095,065, were imported in 1911-12.

The total imports of india rubber, gutta percha and allied gums for the year 1917 were 364,913,711 pounds, value \$193,118,855, against 304,182,814 pounds, value \$158,586,193 in 1916.

Exports of india rubber for the year show an increase of about 35 per cent, the figures being 12,355,898 pounds for 1917, and 4,662,889 pounds for 1916. The difference between the imports and exports of india rubber is 321,017,813 pounds for 1917, and

263,112,668 pounds for 1916. These figures afford a fairly accurate estimate of the United States' consumption of india rubber for the past two years, the stocks carried over at the beginning and in store at the end of the year being the unknown quantities. Exports of the other grades that are scheduled with india rubber were too small for comparison. The importation of chicle for 1917 was 7,440,022 pounds, value \$3,538,353, compared to 7,346,969 pounds, value \$2,829,184 for 1916. Exports for the same period in 1917 were 486,421 pounds, value \$175,321 and 136,889 pounds, value \$44,124, for 1916. From these figures it would appear that less chewing gum was manufactured in 1917 than the year before, when 7,210,080 pounds went into consumption, as compared to 6,953,601 pounds for 1917.

RUBBER GOODS EXPORTS.

The exports of manufactured rubber goods for the fiscal year ending June 30, 1917, amounted to \$31,110,394, showing a decrease of 14 per cent, as compared to \$35,153,374, the figures for 1916. The restrictions placed by Britain on rubber imports to neutral countries and general shipping difficulties are the reasons for this loss of trade.

Automobile tires formed about 38 per cent of our exports last year, and the decrease is due to diminished shipments of tires to England, Australia and Russia. The figures for England in 1917 were \$2,636,654, compared to \$9,175,248 for 1916. Australia imported automobile tires to the amount of \$783,209 in 1917, while \$1,551,154 were the 1916 figures. Russia's imports for 1917 were \$143,916, compared to \$1,125,733 for the year before. All other tires have fallen off about 15 per cent.

Belting, hose and packings show a substantial increase in 1917, when goods valued at \$3,532,384 were exported, as compared to \$2,986,953 for 1916. The export of rubber shoes has increased from 1,976,896 pairs, value \$1,046,102 in 1916, to 3,356,484 pairs, value \$1,716,225 in 1917. The boot trade shows a slight decline in this year's figures when 600,455 pairs, value \$1,483,379, were exported, against 720,130 pairs, value \$1,619,260, for 1916. Insulated wire and cable exports have increased 56 per cent, the volume of business being \$7,191,684 for 1917, compared to \$3,157,239 for the previous year. All other rubber manufactures show an increase of about 11 per cent over the exports for 1916.

RUBBER TIRE ROUGHING BRUSHES.

The revolving wire brushes that are used by the manufacturers of tires and tubes for roughening purposes are in a variety of special styles and sizes according to individual requirements.



The brush here shown is of the replaceable type that has proven by experience to be most effective and serviceable in use.

It is of very simple construction and requires but a minute to place the complete brush on the shaft. The refills are composed of a series of sections to make any width of face from $\frac{1}{2}$ inch to 24 inches, and clamped together with a number of hooks, thus forming a complete wheel. The refillable hub is made of two iron flanges slotted to fit the hooks of the refills, and when the wheel is assembled it is ready to be placed on the shaft of the buffing stand. [The Herold Brothers Co., Cleveland, Ohio.]

The Convention of the American Chemical Society.

ABOUT 1,500 chemists from all sections of the country attended the fifty-fifth meeting of the American Chemical Society in Boston, Massachusetts, September 10 to 13, inclusive, a fair percentage of the membership, considering Boston's geographical location, the present press of business and the fact that the meeting was not coincident with the chemical exposition, as was the case last year.

Headquarters were established at the Hotel Lenox, Boston, and the meetings, for the most part, were held in the large auditorium of the new Massachusetts Institute of Technology buildings in Cambridge, just across the Charles River. The use of the Engineers' Club was graciously extended to members, and there on Monday afternoon and evening were held the meeting and dinner of the Executive Council, the latter tendered by the Northeastern Section.

The first two days of the convention consisted of a program of general character, while the last two were devoted to technical discussions of the various sections sitting separately. War-time demands and the remarkable progress of the chemical industry of this country because of them were the keynotes of the principal session, and, in fact, of the convention as a whole.

At the general meeting, Tuesday morning, devoted to chemists and chemistry in warfare, the visitors were welcomed by Dr. R. C. Maclaren, president of the Massachusetts Institute of Technology, who pointed out the great need of economy and the fact that few can render so much service in saving work as the chemist. Julius Stieglitz, president of the American Chemical Society, responded briefly, referring to the impetus of war, the fine manner in which the members had arisen to the occasion, and particularly to the 10,000 names of chemists enrolled by the Council of National Defense as having offered their services to the government.

At the afternoon session William H. Nichols, chairman of the Committee on Chemicals of the Council of National Defense, delivered an address outlining the important work of chemists in the war, particularly what has been accomplished in the development of new products and in the provision of substitutes for many acids, chemicals and dyestuffs formerly received from Germany. He treated the needs and supplies of potash, toluol and nitrogen at some length, and optimistically stated that the chemists of the country are mobilized and capable of conducting this war of chemistry to a successful conclusion.

Dr. Marston T. Bogert, chairman of the Chemistry Committee of the National Research Council, then spoke on poisonous and other gases in warfare and the ingenious protective devices employed against them. He evoked an outburst of enthusiasm when he told how, following the first gas attack by the Germans upon the British army in Flanders, although the world had been entirely without suspicion that any civilized nation would em-

ploy such a weapon, just four days elapsed after the receipt of the report from the commanding general before 3,000,000 protective outfits had been manufactured in England and delivered at the battlefield. This feat of emergency activity, in which British chemists played no small part, has no parallel in the war. Dr. Bogert outlined the growth of the gas appliances and gas used from the simple chlorine gas, wind-drifted across the lines, to the present gas-carrying shell and cylinder, and the demands made for immediate analysis of new destructive gases which have necessitated the establishment of a wonderful series of chemical laboratories at the front.

Dr. Arthur L. Day, of the Geophysical Laboratory, Washington, D. C., told how, since the beginning of the war, when the German supply was cut off, the United States had succeeded in making its own optical glass.

Late in the afternoon the members enjoyed a harbor trip to

the Hotel Pemberton, where an informal shore dinner and smoker were held. Dr. Henry P. Talbot, of Technology, was toastmaster, and the speakers included Professor Victor Grignard, director of the Military Laboratory of the Sorbonne, Paris; Lieutenant René Engel, chemical engineer of the Ministry of Munitions of the French Army; Arthur D. Little, past president of the American Chemical Society, and

THE RUBBER CHEMIST

The chemist is a busy chap, a working every minute; he analyzes every thing to find out what is in it. War goods he rips to tiny shreds for all the Allied Nations, to see if they are truly up to rigid specifications. He frees the potash held by rocks (the stony hearted misers), and for the rubber men he makes most marvelous catalyzers. The Teuton thought he had us balked in getting out good dyes; our chemist makes them just as good or better when he tries. And when the Germans are well licked and war is at an end, the chemist has a chance to stand the whole world's greatest friend. A serum he should make at once in cauldrons deep and huge; an antidote for German germs, a mental vermifuge. Ten parts of truth it should contain, repentance forty-seven, of restitution seventy-nine, of modesty eleven. With this the whole world-hating crew with lies and theft full sated, should one by one through all the land be freely vaccinated. And should it "take" what joy indeed throughout the whole creation, for it would cure and bring to health the entire German nation.

Dr. L. H. Baekeland, of the National Advisory Board of the National Research Council.

Wednesday was devoted to divisional conferences and meetings at which more than 200 papers were read.

Prominent speakers before the Division of Industrial Chemists and Chemical Engineers, of which H. E. Howe is chairman, were Dr. W. H. Walker, of the Massachusetts Institute of Technology; W. H. Hildebrand, chief chemist of the Bureau of Standards; Dr. L. H. Baekeland, of the National Advisory Board of the National Research Council; Dr. C. L. Parsons, chief chemist of the Bureau of Mines; Dr. W. H. Bigelow, chief chemist of the National Cannery Laboratory; Professor Louis A. Olney, of the Lowell Textile School; Dr. Hawley, of the University of Wisconsin; Alexander Silverman and Raymond M. Howe, of the University of Pittsburgh.

Among other important speakers before various divisions may be mentioned: Alfred H. Cowles, Alfred W. Scheidt, J. E. Breckenridge, H. A. Houston, R. O. E. Davis, Harry Bryan, W. H. Ross, Albert E. Merz, P. H. Walker, C. E. Coates, of the Louisiana State University; Captain White, of the Bureau of Ordnance; J. R. Bailey and R. H. Pritchett, of the University of Texas; and Professor P. E. Brown, of Yale University.

Wednesday evening, in Huntington Hall, President Stieglitz addressed a large attendance of members on "The Outlook of Chemistry in the United States." He reviewed the achievements of American chemists since the outbreak of the war, and said

that in both a military and an economic sense Germany has thus far been saved from defeat by her chemists. But the British and French chemists, he asserted, also rose to the crucial test of the war, and are proving themselves more than a match for their opponents; likewise, American chemists are meeting the most urgent problems of the immediate moment. He pointed out that the future prosperity of the country will depend in a very large measure on our efficiency in chemistry, and that to stimulate this to the greatest possible degree manufacturers ought to treat their research chemists more fairly by sharing with them more equitably the profits resulting from their discovery and invention instead of exploiting them. The wiser policy had been largely responsible for the German leadership in chemical manufacturing. Future welfare demands also fair protective duties for dye, drug and chemical manufacturers, and better patent registration, so that we may have a large measure of chemical independence.

THE RUBBER SECTION.

NOTWITHSTANDING the fact that Boston is considerably less centrally located than New York, the meeting place last year, about 80 representative rubber chemists from many different states were on hand for the annual meeting of the Rubber Section Wednesday morning, September 12, at 9:30

"A Volumetric Method for the Determination of Free Sulphur," by E. H. Johnson and H. S. Upton.

"The Effect of Copper on Crude Rubber," by Charles P. Fox. Dr. Weber's paper on "The Increase in Gravity During the Vulcanization of Rubber" was omitted for lack of time.

THE SYMPOSIUMS.

In view of the interest which was taken last year in the symposium on accelerated tests, it was thought desirable this year to devote the major part of the meeting to general discussions. Accordingly, after getting the opinion of certain members of the Section, three timely subjects were decided on and previously announced, as follows:

(1) The Best Methods for the Determination of Free and Total Sulphur.

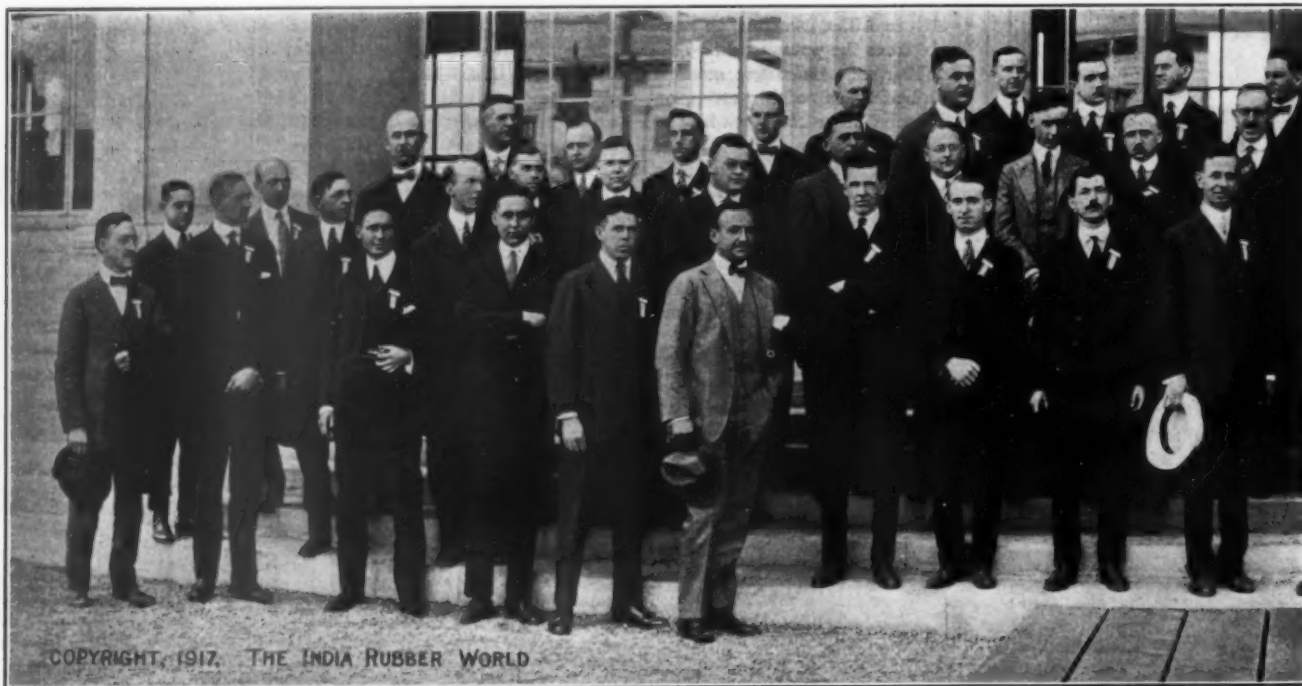
(2) The Use of Accelerators in the Vulcanization of Rubber.

(3) The Rubber Chemist in the National Service.

Dr. L. E. Weber, chairman of the Rubber Section, presided, and the discussion was participated in by J. B. Tuttle, Dr. R. B. Earle, Dr. D. Spence, Raymond E. Drake, C. R. Boggs, J. P. Millwood, L. J. Plumb, Dr. Frederick J. Maywald, A. T. Saunders, Dr. Frederic Dannerth and Henry C. Pearson.

THE DETERMINATION OF FREE AND TOTAL SULPHUR.

Mr. Tuttle opened the discussion with a brief enumeration and description of the published methods for determining free



MEMBERS PRESENT AT THE MEETING OF THE RUBBER SECTION OF THE AMERICAN CHEMICAL SOCIETY

A. M., indicating well sustained interest in the constructive research work being undertaken by this body.

The transactions were held in one of the many classrooms of the handsome new buildings of the Massachusetts Institute of Technology on the Charles River Embankment in Cambridge, Massachusetts, just across the river from Boston.

THE PAPERS.

After the reports of the chairman and secretary on the work of the Section, the following announced papers were read:

"The Direct Determination of India Rubber," by John B. Tuttle and Louis Yurow.

and total sulphur, referring briefly to the advantages and disadvantages of each method. In the discussion which followed, Dr. Earle, Dr. Spence, Mr. Drake, Mr. Boggs, Mr. Millwood and Mr. Plumb participated. Dr. Earle pointed out the need of a method which would determine the sulphur in the rubber, apart from that contained in the minerals, and also drew attention to the fact that some of the methods that have been suggested for determining total sulphur include the sulphur in some of the minerals, but fail to include it in others. Dr. Spence drew attention to the great importance of the combined sulphur in interpreting analytical findings, as opposed to the value of free sulphur and total sulphur.

THE USE OF ACCELERATORS.

The chairman, Dr. Weber, prefaced this discussion with the following remarks in which he pointed out the grave need of considering the use of accelerators from the toxicological standpoint:

During recent years considerable interest has been evidenced in a class of organic compounds which exhibit the peculiar property of increasing the speed of vulcanization. There seems to be a considerable number of bodies which have this property and they have collectively been given the name of accelerators, or more particularly organic accelerators. We have long been familiar with inorganic accelerators. While the number of materials that have this property of accelerating vulcanization is legion, almost all of them have one pronounced property in common that is, they are almost all poisonous—some more so than others. Commercially today, the accelerators that find technical application are almost exclusively aniline or aniline oil derivatives, probably more than 90 to 95 per cent of the accelerators now in use coming in this category. There have been numerous fatalities from the use of these accelerators and also a number of disagreeable injuries to the workmen in the factories from the use of aniline oils, and this matter is undoubtedly going to come before some Public Safety Commission to be investigated; and it has been suggested that we talk the matter over here this morning and get various opinions as to the advantages of aniline and also its disadvantages from the toxicological standpoint, which may result in doing the industry a service, and also ourselves, for if these accidents continue as they have in the past, something will be done to stop the use of aniline oil and it will result to the disadvantage of all of us.

what these compounds shall contain, have a prejudice against accelerators based on the argument that they don't know what they will do. The result is they are afraid they will receive goods which will deteriorate rapidly—or much more rapidly than their ordinary goods. I want to point out that an accelerator isn't much worse than sulphur, and, if properly used, I think manufacturers will be able to see its advantages. Therefore, I think we should promote a discussion of the subject and the education of the public with regard to it. It becomes a fairly serious thing in some lines of industry—not in all of them, but in some lines the industry is somewhat held back by the ignorance of the purchaser, and that is due largely to the lack of discussion on the part of the manufacturers who are supposed to know their properties.

Mr. Tuttle then urged a comprehensive investigation and publication of the results. Said he:

There are two points on which I think this Section ought to take action on accelerators. In the first place, the manufacturers who know most about accelerators have taken up the question from the poison point of view. The use of these accelerators will extend to many factories which are without adequate supervision, and when that happens we are going to run into a large number of cases of poisoning from these accelerators. The United States has a special bureau for investigating industrial poisons, and just as sure as fate they will get hold of this matter before long, if they have not already done so; and when it comes out, it is going to be a rather serious criticism of the rubber industry if they are able to show that the workmen in a large number of factories are exposed to these dangers and the manufacturers are doing nothing. That criticism had already been made in regard to lead poisoning and certain other things.



AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASSACHUSETTS, SEPTEMBER 12, 1917.

Dr. Earle stated that in his experience he remembered only one accident resulting from the use of organic accelerators.

Mr. Boggs believed that the industry had to take precautions for the protection of workmen so that accelerators could be used and the industry get the advantages of them, and he saw no reason why workmen could not be properly protected. Continuing, he said:

It will only be a matter of a few years before everybody is using them, and one of our works of education, I think, ought to be in getting the purchaser to take the goods without discrediting them because they have an accelerator. Some purchasers who desire definite compounds, and even state exactly

I think this Section should appoint a committee to investigate the accelerators used and recommend what precautions ought to be taken by every factory that uses those accelerators, and then have them published in such a form that they can be reprinted by some public-spirited organization and put into the hands of every manufacturer of rubber goods so that he may have them before him. Then, if he goes ahead and kills a couple of his workmen there is no one to blame for that but the manufacturer himself. There has been very little said about this matter in print for fear of giving out trade secrets, but we all know now that most of the factories are using accelerators, and I think it is up to us to do something to protect the rubber industry against unjust criticism.

In the second place, a great many of our specifications are

made for the government departments and other important people. They are not going to change these specifications until they know where they are going, and if we can organize a committee to investigate the effect of accelerators on compounds in vulcanizing and then be able to show that certain compounds, or at least certain accelerators, have not an injurious effect on rubber, we can go to such people as draw up specifications and give them our results, showing them that they can afford to buy rubber goods containing accelerators without fear of a rapid deterioration and a loss. This will have to be done by co-operation; I know of no municipal or state laboratory that will do it, and no government laboratory that has the facilities to undertake such a broad investigation as that will require. They will continue to adhere to the low acetone extract which will eliminate or forbid the use of accelerators. They may be losing something by not permitting accelerators, and, if so, it is up to this Section to show it, because it is too large a matter for any one group to determine.

The following discussion then ensued:

Dr. Maywald: There is no real danger if a man will run his plant or his mill in proper shape.

The Chairman: Isn't that begging the question? If a man will run his plant in proper shape he won't suffer any evil results from poisoning.

Dr. Maywald: That is true, but that is just where Mr. Tuttle comes in; there would be a good deal of information for the manufacturer if Mr. Tuttle's suggestions were carried out.

Mr. Saunders: Down where I get most of my rubber, in Akron, this was very freely discussed and it was well recognized in the hospitals and factories. One factory was known to abandon aniline oil after having inaugurated its use; another factory is using an oil, the fumes of which will reach your nostrils a mile and a half away. We are all anxious to use these accelerators and they are bound to come, but we are bucking against the fact of actual physical injury at present, and I think raising the question simply of putting it up to the acceptance of the manufacturers is side-stepping the health side of the question. We all want to know how far we can carry this safely, and the best means of avoiding injury to our workmen. I think I speak for the body when I speak for myself in saying that we all want to protect our own factories and our own companies, and yet we have found it impossible to draw a free discussion between us of the best reagents; and I doubt if we shall draw anything from the meeting this morning that will be of importance, except that we might, I think, conscientiously call the attention of the proper board of health to the fact that we are eager to invite suggestions from them that will be helpful to the industry.

The Chairman: Isn't it a fact that we, as chemists, are perfectly familiar with the injurious effects of aniline oil, but aren't there a great many small manufacturers who do not know this?

Mr. Saunders: That is right. If there are any medical men here who have treated any of these cases of poisoning from aniline oil, I should be very glad to hear from them. But I should give it as my conclusion that no indorsement from us as to aniline or its derivatives will carry very far with the National Board.

Dr. Maywald: Some men are very prone to aniline poisoning. I have known men who would get a severe headache from the mere smell of it.

Mr. Pearson: I remember a report gotten out by the Department of Labor, and a great deal of it was about bisulphide of carbon. As I remember the report, I don't think the small rubber manufacturer would get much on aniline oil in the way of prevention of accident, but I think Mr. Tuttle's suggestion that something be brought out to guide the small manufacturer in the use of it is excellent.

Dr. Spence at this point read a paper, written in 1911, relating to his claim of priority over Peachy in the use of paranitrosodimethylaniline and stating his reasons for not having applied for a patent. Asked later by Mr. Saunders to give his present opinion as to the best organic accelerator to use, Dr. Spence replied that in his opinion it had not yet been found. There were a number, without mentioning any one in particular, that would do the work very effectively, and he would not want to limit himself in any manner to any particular one. Some were useful for one purpose and some for another.

Dr. Dannerth, in concluding the discussion, referred to the papers published by Dr. Spence in 1907, 1910 and 1911, as of the utmost importance in suggestion and certainly fundamental. Turning then to Mr. Tuttle's remarks, he emphasized the able presentation of the dangers in the use of accelerators,

which deserve attention, and also the limitations placed on their use by specifications. Continuing, he said:

Now, those of us who have had anything to do with specifications, who have had to prepare rubber compounds to meet specifications, know that specifications are a very good thing. We all, I think, agree that specifications written along reasonable lines are a very good thing for both seller and buyer; the great danger that confronts us in the writing of specifications—confronts consumers in the writing of specifications—is in writing them in an irrational manner. Several years ago a large manufacturer of reclaimed rubber said that a consumer asked him whether there was any arsenic in the ash of reclaimed rubber. He wanted an investigation made to show it. It would have taken about \$100 to investigate that. A great deal of harm is being done by this irrational use of specifications, and that is why I believe this Section should devote considerable attention to a consideration of this matter.

To come squarely back to the subject, if organic accelerators are going to be used in our rubber compounds—and they are being used now—the question naturally arises. Are those rubber compounds going to resist certain influences for one year, two years, three years, etc.?

Now, I suppose that if the chairman of this Section were to appoint a committee to cover this subject, that committee could serve as a focus for the data relating to accelerators; on the one hand, the data relating to the dangers in the use of accelerators and on the other the data concerning the stability of rubber goods in which accelerators are used. I think that data should be collected as soon as we can get it because the doubt concerning accelerators is going to linger in the minds of the large railroads. We all know that the railroads of the United States consume very large amounts of rubber goods in the course of a year. Now, in view of that fact, we must put at rest any fear which those consumers may have regarding the use of new materials in the preparation of rubber compounds, and to that end I wish to offer this motion: That a committee be appointed whose business it shall be to consider the subject of accelerators, the committee to have the privilege of so subdividing its work that its data may be most available.

(Motion seconded and unanimously carried.)

THE RUBBER CHEMIST IN THE NATIONAL SERVICE.

In opening this discussion the chairman called upon Mr. Pearson, who spoke, in part, as follows:

We speak of the chemist in national service and we mean the chemist in war. Now, the Chinese stinkpot, Greek fire, gunpowder, high explosives, and all of those horrors, were produced by chemists. So you are responsible in a way for the war, except as it is carried on with clubs and swords and things like that. At the same time, the chemist has come to the front in mitigating the horrors of war. When the poison gas was sprung on the British, in a very short time the gas mask, with an effectual antidote for the gas, was forthcoming. That was the work of the chemist. What the chemist has been doing in Germany to prop up the people and the armies must be wonderful. That we will know in a short time after our boys get to work over there. As for this country, I am not in a position to tell exactly what the chemist has done, as far as the rubber trade goes. The interesting things I have been shown and told I must forget all about—so I have forgotten. But there have been some very wonderful and patriotic things done. A British army officer said to me that the American chemists are simply wonderful. He said a problem came up—not a chemical problem, but one of our chemists knew something about the matter and learned that the price that had been quoted to the United States Government was \$1,000,000. He said it was too high, and upon being allowed to steer the matter, the price to the United States came down to \$600,000. That one man saved the government \$400,000. Now, there is a lot of that sort of work. Take the gas mask; our chemists have gotten out something that goes so far ahead of the English, German and French gas masks that it is simply wonderful; it is simply bully; it is American all the way through.

This is really going to be a very brief talk. The one point I am going to make is the friendly coordination that has come about—speaking of the rubber companies—among the rubber men. There was a problem put up to two of the biggest companies and one of them, through its chemical knowledge partly, and partly through a happy accident, solved it better than anybody in the world has. Its competitor didn't solve it; it got some result, but not comparable with the other. The first thing the successful experimenter did was to send it over to the other and tell exactly what had been done, and they were people who have been fighting each other for years. That is what is occurring all the time now and will continue through the war. It is the best thing that ever happened to the rubber trade because

we are going to forget our little secrets and talk freely and go ahead instead of holding ourselves and everybody else back.

Dr. Spence, chairman of the Sub-Committee on Rubber of the National Research Committee, then outlined the work of his committee. Said he:

When anything comes up for investigation from either of the war departments, I refer it where I think I can get the best results as quickly as possible. So far, only about six problems have come up for action and they have been already assigned. I can't go into the details of them except to say that they cover the question of rubber cultivation in this country, the preparation of puncture-proof tires for war vehicles, and also recently something in connection with a submarine detector upon which I have been working in conjunction with an Akron rubber company. A number of other questions have come up, but have passed out of my hands. The matter of hard rubber for battery cells for submarine is another question, and so on.

The organization is far from complete and we are only just starting out. It is very hard, I find, to get anywhere in Washington, even in the matter of getting problems to work on, that being the most discouraging aspect of the situation—to get actual information regarding requirements, regarding problems which the rubber chemists, and the rubber chemists alone, can work out. I hope, however, that we shall in the course of time find out other things besides those I have that will need investigation, and I hope when the time comes that those of you who have given your names to the government and expressed a willingness to help will come forward and tackle them.

Mr. Tuttle, of the Bureau of Standards, the biggest testing laboratory in the country, where nearly six hundred men are employed, about four hundred of whom are college graduates, further emphasized the uncertainty as to probable government requirements, and expressed the opinion that the War Department, the Navy Department and the Signal Corps have got to subdivide their work. "The men in charge," he said, "are army officers who may know a lot about fighting and the disposition of troops, but when it comes to getting the best material for a certain purpose they do not realize sometimes what they are going to require until the actual need comes, only to find then, perhaps, that it is not yet on the market, that it is unobtainable in sufficient quantities, or cannot be made within less than six months or a year." The Bureau of Standards is therefore trying to anticipate needs and means of supply, and, as an instance of the readiness with which American manufacturers are responding, once these needs are established, Mr. Tuttle supplemented Mr. Pearson's remarks as follows:

That work has gone to the rubber companies, and the thing that appealed to me in connection with it was the way the rubber companies and the fabric companies treated the question. As soon as they knew what the government needed they put every machine they could use on it, taking the machines off work that was paying them a good profit, and putting them on anything the government needed at whatever price the government wanted to pay. I am sure all of us, if we get anything from the government to do, will do it in just that same way. But don't tell anybody, even the men working in the same laboratory with you; and make your notes just as hard to read as possible, for God only knows where these fellows get their information in Washington; I don't. When we know about these things we keep them in our heads and wear our hats day and night.

Mr. Boggs then called attention to the recently formed Botanical Raw Products Committee of the National Research Council, saying in part:

The committee has been formed to help the manufacturer in getting new raw products or putting into effect certain substitutes, and it is composed of botanical men who have at their call the best botanical knowledge in the United States and all that the various botanical museums contain. There are various botanical raw products which can be obtained in the United States, but which have not been up to date, and many manufacturers have been doing without them. The botanical committee can let the manufacturer know if material such as he needs is obtainable in the United States, the quantity, quality, etc., and thus enable the manufacturer to supply his wants. It has already been able to give the manufacturer valuable information regarding substitutes. The main point is that the ordinary manu-

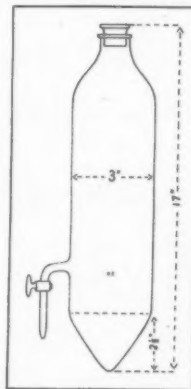
facturer does not know the botanical origin of the substances he is using; if he is using one sort of wood he doesn't know that another similar wood is growing naturally in this country.

THE BUREAU OF STANDARDS METHOD FOR THE DIRECT DETERMINATION OF RUBBER.

By J. B. Tuttle.

PRELIMINARY extractions of a two gram sample are made according to the usual methods of the Bureau of Standards Circular 38 to determine the amount of acetone, chloroform and alcoholic potash extracts. These extractions will prove the presence or absence of mineral rubbers and oil substitutes. In the absence of both, proceed as below. If mineral rubbers are present, make a chloroform extraction; if oil substitutes, an alcoholic potash extraction; and if both are present, make both extractions. In every case, make these extractions after the acetone extraction, and before the sample is allowed to swell in chloroform.

Take 0.500 to 1.000 gram of the finely ground sample (call this weight W) and extract with acetone for eight hours. Make such other extractions as may be required above. Dry the residue in hydrogen (or other inert gas) for two hours at 100 degrees C. Place the sample in 50 to 75 cc. of chloroform, and allow it to swell. Pass into this solution, until the green color which is formed



STOPPERED BURETTE.

persists for thirty minutes, the gases formed by heating arsenic trioxide, and nitric acid of specific gravity 1.30. It is important here in order to avoid contamination, that no rubber connections be used. Immerse the flask containing the rubber in cold water during the nitration. Allow the solution to stand overnight; the next day, filter off the nitrosite through a Gooch crucible and wash with small quantities of chloroform. Remove the acid gases and chloroform from the flask by means of a gentle current of air. Evaporate the filtrate to dryness. Dissolve in acetone the nitrosite remaining in the flask, on the Gooch crucible, and in the residue from the filtrate, and filter the solution through asbestos into the weight burette. The total volume should be about 100 cc. Allow this solution to stand a short time, so as to permit any sediment which may form to settle out in the bottom of the weight burette. Weigh the burette before and after filling, calling the difference N. Draw off about 25 cc. into a small Erlenmeyer flask, reweigh the burette and call the difference O. Evaporate the portion drawn off to a small volume, transfer to a porcelain boat (about 14 cm. long, and 1 cm. wide) which has been filled with alundum, and rinse the flask with acetone. It is best to make this transfer in small portions, drying the boat and contents for a few minutes between each addition. After the final washing and drying, add 1 or 2 cc. of 1 per cent solution of ammonia in distilled water, and dry in an inert gas for one hour at 90 degrees C. Repeat with a second portion of ammonia and dry as before. By this means, all of the organic solvent will be removed.

Place the boat in the furnace, and proceed with the combustion as usual. The furnace should be carefully tested before using. Pass the products of combustion through U-tubes or other satisfactory absorption tubes, placed in the following order: a, b, c; potassium bichromate and sulphuric acid; d; powdered zinc, 20-mesh; e, f; soda-lime and calcium chloride; g; potassium bichromate and sulphuric acid; h; dilute palladium chloride solution. Very little palladium chloride is needed. We use about one drop of 10 per cent solution in 10 cc. of distilled water. Weigh e, f and g before and after each combustion; refill c and

g frequently from the same solution, so that the gases which enter e and those that leave g will have the same moisture content. The palladium chloride serves to detect the presence of carbon monoxide; if there is any blackening, it shows incomplete oxidation. In this event, discard the results and repeat the determination.

The carbon dioxide will equal the algebraic sum of the differences in tubes e, f and g. Call this P. The factor for calculating from carbon dioxide to rubber hydrocarbons is 0.309. The formula is therefore as follows:

$$P \times 0.309 \times N \times 100 = \text{Percentage rubber hydrocarbons.}$$

O W

Correct this figure for whatever extractions were made previous to nitration.

SUMMARY.

Based upon Wesson's idea of determining the carbon in rubber nitrosite, assuming that Harries and his co-workers were correct in saying that the carbon of the rubber molecule passes through the process for the formation of the nitrosite without loss, a method has now been developed which will correctly determine rubber under practically all conditions in which it may occur in soft vulcanized compounds. It is proposed at some future time to attempt to develop the method so as to apply it to hard rubber compounds.

The Effect of Copper on Crude Rubber.

By Charles P. Fox.

A Paper Prepared for the Rubber Section of the American Chemical Society.

MANUFACTURERS of rubber goods, following the teachings of Pearson,¹ have carefully avoided the use of copper salts in their compounds. Coppered iron was used to a limited extent in vulcanizing rubber to iron. Copper in this operation has recently been superseded by a plating of other metals.

The accidental observation of Dewar concerning the marked change of a rubber gasket used in contact with a copper pipe led him to compare its action with other metals. His tests were made by covering sheet rubber with disks of metals and exposing them to a heat of 150 degrees F. for several days. His findings were that copper gave the greatest effect, and that the action was due to oxidation, copper being an oxygen carrier.

Thomson and Lewis² took up the matter and made an exhaustive study of the action of metals and their salts on vulcanized rubber. Their work was with sheet rubber, vulcanized by the Parkes process (cold cured). The metals in the form of powder were sprinkled over the surface of the sheet, and the salts, if soluble in water, were made into a paste and applied as a paint. The treated sheets were then exposed for 10 days at a temperature of 60 degrees C. The action was determined by stretching the test piece. Their results sustained those of Dewar: "Of the metals used copper was by far the worst. Copper salts completely destroyed the rubber."

Foden, an English textile expert, found that wherever cloth containing copper (used in dyeing) was used in waterproofing, the rubber became hardened and was soon destroyed.

Weber³ gives an explanation of the action of copper on rubber, experimental data and a method of estimating copper in cloth. This method is simple and reliable, and should replace the methods now used in determining copper in foods. Weber placed the maximum limit of copper in cloth for waterproofing at .005 per cent. He also noted that the presence of grease or oils in the cloth facilitated the action of the copper.

Each⁴ attributes the action of copper to the formation of copper chloride which acts as an accelerator.

Morgan⁵ states that the presence of copper compounds may cause "tackiness" in crude rubber, and strongly advises against the use of copper vessels in the preparation of crude rubber, and even against the use of copper insecticides or fungicides on trees during the tapping operation.

By experiments made by adding copper salts to rubber latex, Morgan concludes that the rate at which tackiness is induced is dependent upon the amount of copper salts used.

The formation of resins is the main factor in the copper-induced tackiness. Schidrowitz⁶ says that tackiness is due

to a physical degradation of the rubber molecule and not to a change in its chemical composition.

There seems to be a distinct difference between "perished" or "decayed" rubber (Lewis and Thompson), and the "tackiness" observed by Morgan. Tackiness, as understood by the practical rubber worker, is a soft sticky condition affecting crude rubber.

Several years ago I became interested in the action of copper on dry crude rubber. Some of these experiments I have recently repeated. In this particular case the work shows the action of copper in the form of acetate on pale plantation sheet crude rubber.

Small pieces of this grade of crude rubber were treated with a 1 per cent water solution of neutral copper acetate; copper acetate solution with 10 per cent acid; copper acetate solution with 10 per cent ammonia; and oil carrying 1 per cent of dry copper acetate. Action was checked against blanks of untreated specimens, and with straight oil-treated samples. To observe the action of light, two series were run, one being exposed to bright light in a warm room, and the other being placed in a cool and dark closet. Extremes in application of the chemical were represented by a single spot, and by immersion for 24 hours. The duration of experiment was approximately three months. (An exhibit of these specimens mounted and tabulated on cards was prepared by Mr. Fox for inspection.)

All the treated samples show tackiness due to the reagent. The ammonia copper acetate combination shows a much greater action than copper acetate alone or in combination with acetic acid. The oil-treated samples must be considered in a separate group. They are placed here to show results that will arise from washing mills in bad order. While oils alone exert a powerful action on crude rubber, the presence of copper magnifies this action. Results with oil and copper on crude rubber coincide with the observation of Weber concerning the presence of oil in cloth aiding the action of copper on rubber.

The action of the reagent is proportional to the time of application. The influence of light and heat is not as great as expected. This feature of the experiment emphasizes the fact that copper salts induce tackiness in crude rubber independently of the usual causes of this trouble.

Considered as a whole the work sustains the views of Dr. Morgan.

REFERENCES.

- ¹ Pearson: "Crude Rubber and Compounding Ingredients."
- ² Thompson and Lewis: Abstract from the "Journal of the Society of Chemical Industry," 1891, volume X, pages 717-718.
- ³ Weber: "The Chemistry of India Rubber."
- ⁴ Heil and Esch: "The Manufacture of Rubber Goods."
- ⁵ Morgan: "The Preparation of Plantation Rubber."
- ⁶ Schidrowitz: "Rubber."

What the Rubber Chemists Are Doing.

PERCENTAGE OF RESIN IN RAW RUBBER.

THE International Association for Rubber Cultivation in the Netherlands Indies has translated and circulated a communication of the Netherlands Government Institute for the benefit of the rubber trade and industry, of which the following is an abstract:

The expression "Percentage of resin" is adhered to because generally adopted. Dekker has shown that the acetone extract contains nitrogenous substances, consequently other substances were present besides resins.

Instead of the Soxhlet apparatus, the Institute uses exclusively the apparatus and method of Berntrup because results can be obtained in six hours.

The Berntrup apparatus consists of a flask of special form and dimensions, permitting its being weighed on a chemical balance. The extraction thimble is suspended on two threads, held between the neck of the flask and the cork.

The method of determining the acetone extract (percentage of resin) is as follows:

Care is taken to cut the sample very fine. Three to five grams are rolled between muslin, placed in a paper extraction thimble and boiled under a reflux condenser with about 100 cc. of acetone in the Berntrup flask, for two or three hours. During that time the thimble is suspended so low that it reaches nearly to the bottom, hanging in the boiling liquid. Then the thimble is drawn up by the threads

and washed out for one or two hours by the acetone running back from the condenser, after which the thimble is removed and the acetone distilled off and the flask dried to constant weight at 105 degrees C.

COMPARATIVE DETERMINATIONS OF RESINS.

Rubber.	Soxhlet Apparatus. Per Cent.	Berntrup Apparatus. Per Cent.
Hard fine Para	2.66	2.67
Hard fine Para	2.58	2.58
Hard fine Para	2.53	2.53
Smoked sheet	3.25	3.32
Ceara sheet	6.83	6.86
Block Hevea	2.72	2.72
Block Hevea	3.31	3.23
Hevea crêpe	3.28	3.06
Hevea crêpe	3.73	3.62
Manicoba	3.43	3.47
Castilloa	16.70	16.70
Hard Congo	2.02	1.99

The analysis of 137 samples of *Hevea* plantation rubber shows an average of 2.9 per cent of resins. The percentage of resins in sheet and crêpe are essentially the same.

The average percentage of resin in hard fine Para also amounts to about 3 per cent. The percentage of resin from rubber obtained by evaporation of *Hevea* latex, according to the processes of Kerbosch, Schadt and others, amounts to a trifle more than 3 per cent; however, it must be borne in mind that a small part of the water extract of those rubbers is also removed during the acetone extraction.

Hinrichsen and Marcusson found in 1910 that the resins of *Hevea Brasiliensis* do not possess any optical activity, while those of other botanical origin, such as *Ficus*, Ceara, and *Castilloa* rubber, are more or less optically active. This observation served as a means for deciding, even for vulcanized samples, whether *Hevea* or another rubber was present. While confirmed by the Institute, the point has lost much of its practical value,

now that most of the rubbers on the market are descended from *Hevea Brasiliensis*.

SAPONIFICATION OF RUBBER RESINS.

Dekker has determined some figures relating to the saponification of rubber resins. The following table shows these results:

Species of rubber or resins -	Resin per cent.	Per cent of resin non-saponifiable.
Hard fine Para.....	3.0	25.4
Hevea sheet	1.8	48.3
Hevea crêpe	3.2	22.0
Castilloa	18.9	73.7
Congo	4.4	68.3
Oxidized rubber (cut sheet).....	60.5	2.4
Jelutong	38.1	83.2
Dyera crêpe	7.2	77.8

The presence of non-saponifiable parts of resin is of importance because they are found as mineral oil, in the complete analysis of vulcanized rubber, and an error is thus introduced in the result.

The investigations of the Institute on the extraction of the resins of balata and gutta percha with various solvents showed that for the determination of resin in those gums, acetone is the most suitable liquid for the extraction. This operation may be considered complete after three hours' extracting in the Berntrup apparatus, and two hours' washing.

PERCENTAGE OF ASH IN RAW RUBBER.

The percentage of ash in raw rubber is made in the Institute as follows:

One to five grams of the finely cut sample are incinerated in a porcelain crucible placed in a round opening cut into an asbestos millboard in such a way that the flame cannot come into direct contact with the contents. For plantation rubbers, 2 grams is sufficient. For wild rubbers, usually contaminated by impurities, it is better to use 3 to 5 grams.

The ash of *Hevea* rubber obtained by coagulation is generally low. Ninety-five samples of *Hevea* sheet averaged 0.38 per cent; 102 samples of crêpe averaged 0.30 per cent. This difference is small, but indicates that the sheet contains more serum parts of the latex. The ash of hard fine Para has the peculiarity, in contradistinction to that of *Hevea* plantation rubber, that it contains a fairly large proportion of iron. Whether this iron really emanates from the latex may be doubted. Probably it gets into the rubber latex by way of rusty cups or tins.

NITROGEN AND PROTEIN IN RAW RUBBER.

Nitrogen is determined by the Kjeldahl method, as follows:

One gram of finely cut sample is put into a destruction flask. To this is added one drop of mercury (about 0.6 grams) and 30 cc. of phosphorus-sulphuric acid (1 litre sulphuric acid of specific gravity 1.84, with 200 grams phosphorus pentoxide). When the sample has been entirely impregnated with phosphorous-sulphuric acid, heating is started with a small flame. When foaming diminishes, the flame is increased in proportion, until the liquid boils. After the liquid has become colorless, boiling is continued for a short time. After cooling down, dilute with water and pour into the distillation flask. The volume of liquid is brought with the rinsing water to about 300 cc., and the ammonia which has been formed is distilled off, after adding 150 cc. of the following liquid: 1,000 grams caustic soda and 20 grams sodium sulphide in two litres of distilled water. A few pieces of heated pumice stone are added. The distillate, which must amount to at least one-third of the original liquid, is collected in a flask with 25 cc. of sulphuric acid of known strength (about 0.1 normal).

In connection with the low percentage of nitrogen in rubber,

it is necessary to make a blank. The so-called protein percentage is found by multiplying the nitrogen by the factor 6.25. Doubt exists as to the exactitude of this factor, but it may be taken for the present that its value is rather indifferent for a reciprocal comparison of rubbers.

The protein percentage, as found by the described method, varied in the neighborhood of one per cent, both for *Hevea* crêpe as well as for *Hevea* sheet.

The protein of Para rubber is as a rule somewhat lower than three per cent, and often even lower than two per cent; that from rubbers obtained by the evaporation process is, however, higher (4.7 to 5.4 per cent). Here we are led to the conclusion that either the Para process is not a simple method of evaporation, or that the composition of the latex from trees in Brazil differs from that of trees in the plantations.

The protein of raw rubber was determined, both before and after acetone extraction, and it was generally found by Dekker that this percentage was smaller after extraction. A distinct decrease of the protein by the extraction was noted in most cases, and this fact is taken as an indication that not all the nitrogen in the rubber exists as protein.

According to an investigation by the Institute, the water extract, obtained by extracting rubber for six hours with distilled water on a water bath, also contained a part of the nitrogen compounds.

Through these observations, it is evident that the nitrogen compounds of rubber do not consist exclusively of protein.

COMPARISON OF AMAZON HEVEA RUBBERS.

F. Helm has made a comparative study of different varieties of *Hevea* rubber. Chemical and physical examination of six samples of "Borracha fina" from different states of the Amazon district, F. de Caviana, F. de Amapu, F. de Cajary, F. de Xyngu, and F. de Tapajoz, led the author to conclude that the differential properties of the *Hevea* trees indigenous to those districts are not sufficiently marked to justify preference for seed from one particular district in the formation of new plantations. The samples studied had the characteristics of a fine medium soft Para. [*Bulletin of Agricultural Intelligence*, 1917, 8 600-601.]

CHEMICAL PATENTS.

THE UNITED STATES.

PLASTIC MATERIAL AND PROCESS OF MAKING. The material referred to is heptachlor caoutchouc, a substance characterized by the properties of plasticity and of extreme resistance to acids, alkalis, chlorine and other corrosive agents. The process for producing this material consists in treating with chlorine india rubber dissolved in a solvent, which does not react with chlorine, and subsequently removing the solvent by evaporation or distillation. [Stanley John Peachey, Heaton, Mersey, near Manchester, England. United States patent No. 1,234,381.]

PROCESS OF DEVULCANIZATION. A process of removing combined sulphur from vulcanized rubber by dissolving the finely divided rubber in a suitable solvent, dissolving in the same solvent an excess of a vulcanizing accelerator, together with a reagent adapted to combine with the sulphur when freed from the rubber. This reagent may be a part of the accelerator itself. [David Spence, Norwalk, Connecticut. United States patent No. 1,235,850.]

PROCESS FOR REMOVING COMBINED SULPHUR FROM VULCANIZED RUBBER. The process consists of first: removing the uncombined sulphur from vulcanized rubber in any usual manner, second: dissolving the vulcanized rubber so freed from impurities in a suitable solvent (xylol), third: added thereto at a suitable temperature, anhydrous caustic alkali under conditions of agitation,

and fourth: precipitating the rubber from the solution. [David Spence, Norwalk, Connecticut. United States patent No. 1,235,852.]

CEMENT AND PROCESS. Plastic compositions adapted for sealing vacuum apparatus, and consisting essentially of gutta percha or rubber and a resin of the para-cumaron and para-indene type, together with suitable filler, such as chalk. One of several examples given in parts by weight is gutta percha 20; para resins 40; chalk 20. This mixture is heated to fluidity in a closed vessel which is exhausted of air as completely as possible, the vessel being heated by means of an oil bath at 260 degrees C. and the contents stirred by a magnetic device. The vacuum treatment is continued until the contents of the vessel show no vapor pressure. These cements may be repeatedly melted and solidified without injury, and are exceedingly tough. [James P. A. McCoy, Wilkinsburg, assignor to Westinghouse Electric & Manufacturing Co., Pittsburgh—both in Pennsylvania. United States patent No. 1,236,190.]

PROCESS OF MAKING A FILLER FOR RUBBER OR PAINT. The production of a filler consisting in subjecting the precipitate produced in clarifying the juice in sugar manufacture to a temperature adapted to drive off the moisture without discoloring the product. [William B. Rosevear, Jr., Detroit, Michigan. United States patent No. 1,237,704.]

METHOD OF TREATING AUTOMOBILE TIRES AND INNER TUBES. The application of castor oil to the inner wall of the tire shoe with which the inner tube contacts for the impregnation of the shoe and surface coating of the inner tube. [Frank S. Walton, Philadelphia, Pennsylvania. United States patent No. 1,237,977.]

METHOD OF VULCANIZING RUBBER ARTICLES. The method consists in first subjecting the articles to the action of sulphur chloride and then to a mixture of aniline and benzol, whereby acids in the rubber are neutralized. [Theodore Whittlesey, Upper Montclair, New Jersey, assignor to Rubber Regenerating Co. United States patent No. 1,238,236.]

METHOD OF COLORING RUBBER BALLOONS. The balloons while on their forms are dipped, after vulcanization, in an aniline coloring matter dissolved in a solvent of rubber. [Marion M. Harrison, Akron, Ohio. United States patent No. 1,239,180.]

CHEWING GUM. A composition comprising rubber, sugar, ocotilla gum, and extract of licorice. [Edgar W. Snyder, Los Angeles, California. United States patent No. 1,239,313.]

THE UNITED KINGDOM.

INDIA RUBBER COMPOSITIONS. A compound for outer shoes of pneumatic tires. The proportions recommended are 12 ounces of crude rubber with 1 3-10 to 3 7-10 ounces of granulated dry cork, together with 12¼ to 21½ ounces of granulated slag. The mixture is finally molded and vulcanized. [E. Von Vargyas, 717 Woodward Building, Washington, D. C. British patent No. 107,107.]

INDIA RUBBER COMPOSITIONS. A vulcanized mixture of preferably 2 parts rubber, 5 parts spent tan, 1½ parts coal ash, 2½ parts soot, 2 parts dry pigment and 3 parts sulphur is employed for electrical insulation. The product resembles vulcanite. [T. S. Chivers and C. Marter, 11 Manor Parade, Manor Road, Stoke Newington, London, England. British patent No. 107,122.]

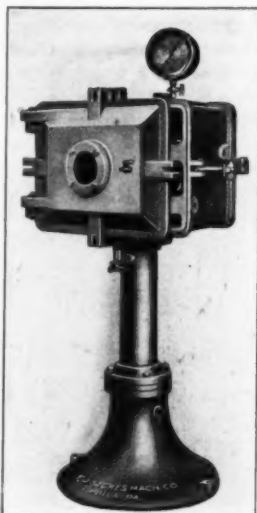
NEW ZEALAND.

RUBBER SUBSTITUTE. A composition of gelatine (or glucose or treacle), water, rubber, diatomaceous earth, zinc white, sulphur, calcined magnesia, litharge, and a toughening agent, as formaldehyde. [John Flint, McLachland avenue, Rushcutters Bay, Sydney, New South Wales. New Zealand patent No. 38,536 (1917).]

LABORATORY APPARATUS.

LABORATORY VACUUM DRYER.

A VERY desirable installation for a rubber works laboratory is a vacuum dryer of the type shown in the illustration. This is one which will not occupy a large amount of valuable space, and which can be easily and fully adapted to the requirements of experimental work. This dryer is compact, yet it has ample capacity for any laboratory purposes, having two steam-heated shelves 12 by 18 inches with four inches clearance space, which may be heated with steam or hot water. A vertical surface condenser and receiver form the stand for the dryer. With this apparatus, materials that are too sensitive to heat and oxidation, may be dried rapidly at a low temperature without exposure to the air. [F. J. Stokes Machine Co., Philadelphia, Pennsylvania.]



THE NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES.

THE Third National Exposition of Chemical Industries was held the last week in September at the Grand Central Palace, New York City. There were more than 350 exhibits, many being notable and of special interest at this particular time in the history of our country. There were a large number of lectures and motion pictures of various phases of the chemical industry. Many new products of the American chemical industry were shown, and among them some of special interest to rubber manufacturers.

Among the many exhibits were those of the following manufacturers, whose names and products are familiar to the rubber trade: The exhibit of the Buffalo Foundry & Machine Co., Buffalo, New York, occupied the entire end of the main floor, where special types of their machinery were shown in actual operation, the most prominent feature being a 120,000-pound vacuum dryer. There were also vacuum drum, shelf and roller dryers; dry vacuum pumps, both horizontal and vertical of the single and two-plate types. A handsome steel engraved program was distributed to visitors. The Barber Asphalt Paving Co., Philadelphia, Pennsylvania, maker of Genasco mineral rubber, a hydrocarbon of wide use in rubber compounding, was well represented in an attractive booth. A most comprehensive line of recording thermometers and temperature regulators for rubber manufacturers was shown in the exhibit of the Bristol Co., Waterbury, Connecticut. The exhibit of the Corn Products Refining Co., New York City, maker of "Paragol," the corn oil substitute well-known to the rubber trade was found on the mezzanine floor. Those interested in mixers for rubber compounds were able to see a good exhibit at the booth of the J. H. Day Co., Cincinnati, Ohio, makers of special rubber machinery.

The J. P. Devine Co., Buffalo, New York, exhibited its newest vacuum dryer in actual operation, which attracted general attention from the trade. The specialties of interest to chemists manufactured by the General Electric Co., Schenectady, New York, were shown on the main floor and attracted much interest. The Hunter Kiln Co., Indianapolis, Indiana, owner of the Hunter Patent Process and Dry Kiln for drying all kinds of rubber materials, exhibited rubber dried by the Hunter Process. An

interesting and convincing description of the Lummus Automatic Caustic Soda Dissolver was given at the booth of the Walter E. Lummus Co., Boston, Massachusetts. Many uses of hard rubber were shown in the exhibit of the Luzerne Rubber Co., Trenton, New Jersey. These included hard rubber pipes and fittings, battery jars, large and small and a variety of other products made by this company. "Magmetco" brand crimson and golden sulphuret of antimony were on exhibit at the booth of the St. George Chemical Co., New York City, where an obliging attendant explained the advantage of this coloring ingredient to the rubber trade.

The large and varied line of recording gages made for the rubber makers by Schaeffer & Budenburg Manufacturing Co., Brooklyn, New York, was shown and intelligently described at the booth of this company. Here could be seen the Bourdon spring type, the diaphragm spring type, the Duplex, or two-pen type, and the float type of the Columbia Recording Gages, made by this company. "M. R. X." mineral rubber, a well-known rubber compounding ingredient, was on view at the exhibit of the Standard Emarex Co., New York City, where rubber men were told of the many advantages obtained by the use of this well-known material. "Tire-Lith," a new compounding ingredient, said to produce stronger, livelier and longer-serving tires, was on exhibit by the Durex Chemical Corp., New York City, maker of industrial and rubber chemicals. The well-known rubber machinery makers, Werner & Pfleiderer Co., Saginaw, Michigan, occupied a well-arranged space on the main floor, where every attention was given to requests for information concerning the lines of machinery made by this company.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, exhibited the line of electric specialties applicable to the industry and made by this important company. A large and comprehensive line of druggists' rubber sundries, molded goods and glassware made by the Whitall-Tatum Co., New York City, were shown on the mezzanine floor. On Tuesday evening, moving pictures were shown of the manufacture of lead paint, accompanied by a description by John R. MacGregor, assistant general sales manager of the Eagle-Pitcher Lead Co.

THE MANUFACTURE OF COMPLEXION BRUSHES.

THIS article has within the last few years acquired such prominence and is made in such quantities that the method of its production may be interesting. It is not an expensive nor difficult article to make, although great care is necessary to secure perfect presswork. The stock is sheeted on a calender and cut to the exact size of the brush to be made. Owing to the "teeth," each one of which, of course, requires a separate cavity, the greatest care is necessary, first, that the mold be absolutely clean, and second, that the soapy emulsion used be of the right consistency and properly applied. With valves, heels, etc., this may not possibly be a fine point, but with the complexion brush, or any form of rubber brush, it is most essential. A perfectly clean brush and cup, and white Castile soap should be used, and care should be taken to soap the mold so thoroughly that the emulsion is forced into and through each "tooth" cavity. The necessity for this care is apparent in view of the fact that a single missing "tooth" makes the brush a "second." About the only drawback to producing this article successfully lies in the liability to break off the "teeth" as the brush is removed from the mold. To overcome this, it may be necessary with some stocks to give the mold a double soaping, i. e., soap once and place in the press for one minute, remove and soap a second time, then fill with the prepared stock. A stock is to be preferred that will cure in 5 or 10 minutes.

The method of making oxide of zinc, used more than any other coloring matter in the production of white rubber, is ably described in an illustrated article in "The Iron Age," by George C. Stone, metallurgist of the New Jersey Zinc Co., New York City.

New Machines and Appliances.

THE MORRIS TRIMMING MACHINE.

THIS is a novel and ingenious machine for trimming molded soles, heels and a variety of mechanical rubber goods. The principal part of the machine consists of two cutting members, one comprising a substantially cylindrical guiding surface, terminating in a circular cutting edge, and the other having a circular cutting edge lying in a plane non-parallel to the plane of the first cutting edge, the intersection of the planes of the cutting edges being a chord of one of the circles. The knives in this position give exactly the same result as by taking an ordinary pair of trimmers in the hand and closing them. On the lower shaft a small spring is provided that lightly presses the two cutting edges together. There are three speeds, slow, medium and fast, and the changes are made by simply shifting the cone belt.

The cylindrical guiding surface of the upper knife terminates in a circular cutting edge that is 9.42 inches in circumference. Therefore, three revolutions of the knife will trim a sole averaging 28 inches around. On slow speed, the knives make 52 revolutions per minute. For instance, one revolution of the knife trims a heel averaging nine inches around. On medium speed, the knives make 78 revolutions and on the fast speed, 104 revolutions, so that it is a very simple matter to figure just what amount of work the machine can produce.

Fig. 1 shows the machine arranged for trimming soles. The shaft that holds the lower cutting knife extends beyond it and

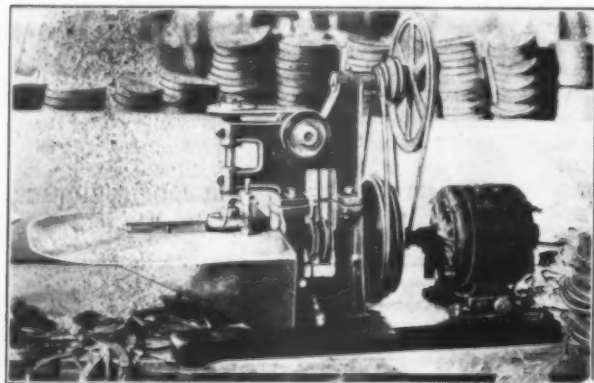


FIG. 1. SOLE TRIMMING MACHINE.

is parallel with the table. Mounted on this extension are two rolls, one turning with the lower knife while the other turns in the opposite direction, the table being recessed just enough to permit the rolls to extend above the surface in order to move the sole. Thus the sole is continually pushed on against the cylindrical guiding surface of the upper knife, and almost turns automatically when the heel or toe is to be trimmed. The photograph shows the space allowed for the overflow to pass under the upper knife and also a guide that, when properly adjusted, makes it impossible to damage the soles.

Fig. 2 shows the machine trimming siphon packing, a very difficult thing to trim. An arm is provided for holding a small wooden spindle, which is turned up properly to hold the rubber disks, provision being made for correct spindle adjustment. The upper part of the arm which holds the spindle freely revolves, so that when the disk is placed on the spindle the knives revolve simultaneously and trim off the overflow. This machine will trim 1,500 siphon packers per hour on slow speed.

Heels are trimmed by holding them between the thumb and

finger as near the center as possible and by lightly pressing them against the cylindrical guiding surface. The machine turns the heel around and trims it at the same time. The machine weighs about 80 pounds, including the motor, and is substantially mounted on a cast iron base and driven by a small motor con-

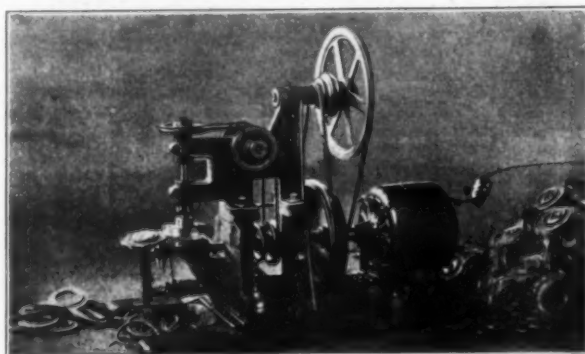
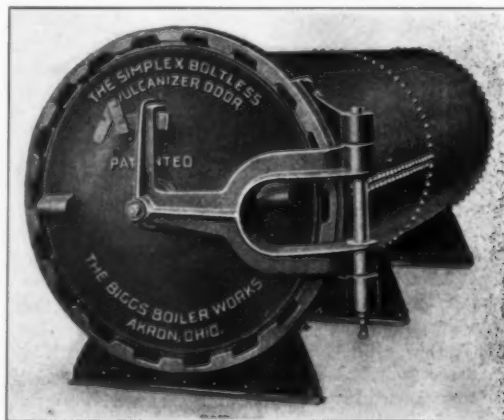


FIG. 2. SIPHON PACKING TRIMMING MACHINE.

nected by a drop cord to a convenient lamp socket. A push button is provided for starting and stopping it. [T. W. Morris, 3304 Warren Avenue, Chicago, Illinois.]

A QUICK-OPENING VULCANIZER DOOR.

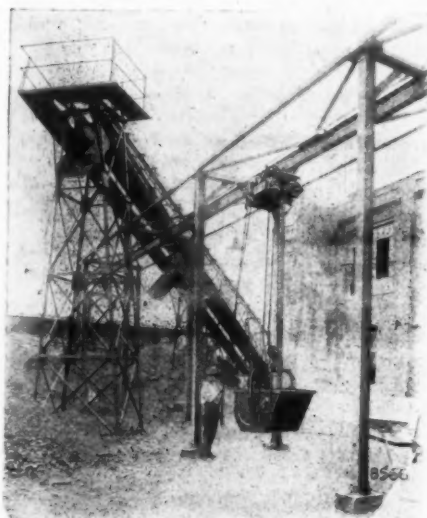
The Simplex boltless door for horizontal and vertical vulcanizers, shown in the accompanying illustration, is of the quick-opening type and has demonstrated its value in saving time and labor wherever it has been used. The door is designed along the lines of maximum strength combined with ease and simplicity of operation. It is made throughout of cast steel, and all the working parts are accurately machined and fitted. The door is provided with adjustments whereby the natural wear occasioned by long service may be taken up readily. The opening and closing operation is accomplished by turning the door approximately 8 inches, a question of only 30 seconds in either case, while the automatic locking feature insures tightness and safety. A separate batting ring is provided, so that this new door may be attached to an old type of door by using the old



bolts. The Simplex door is furnished in all standard sizes from 24 inches to 72 inches in diameter. [The Biggs Boiler Works Co., Akron, Ohio.]

LINK-BELT ELECTRIC HOISTS.

The ready adaptability of electrical power to industrial uses has covered a broad field in the manufacturing business. The rubber industry was among the first to utilize electrical energy



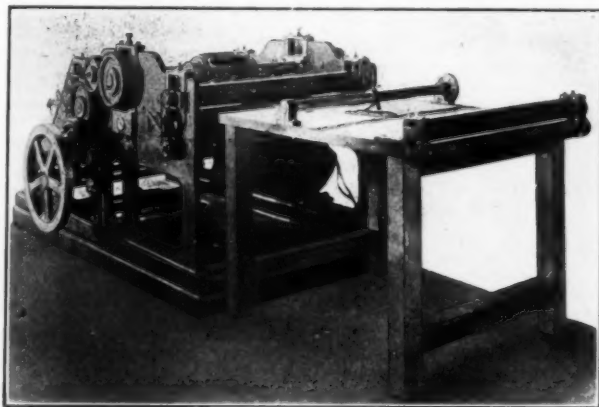
and to-day all the larger mills are electrically driven. Electrical hoists have readily found a wide range of usefulness in rubber mill practice and now they are being operated with equal success in handling coal.

The accompanying illustration* shows a C-1 cord-operated motor trolley hoist, with 1,000 pounds capacity hand-

filled, self-dumping, and self-righting tub bucket, used for delivering coal to the stoker hoppers in the boiler room. The bucket dumping latch may be tripped from the boiler room floor by pulling on a rope. This particular view shows outside track system and the coal supply. [Link-Belt Co., Chicago, Illinois.]

THE MALM RUBBER PUNCHING MACHINE.

That possession of the field so long occupied by the venerable dieing-out machine is to be contested, may be seen by the following illustrated description of a new rotary blanking machine. It is fitted with multiple rotary cutting dies for any style of punching or blanking either uncured rubber stock as it comes from the calenders, or stock fed directly from the tubing machine. It will also punch cured stock, soft rubber, hard rubber



stock, and cured or semi-cured rubber fabrics. Examples of the character of goods the machine produces are rubber soles, rubber heels, hot water bottles, bathing caps, inner tube valve caps and similar mechanical rubber goods. The operator keeps the machine properly fed and removes the finished parts, otherwise the machine is absolutely automatic in its operation. The machine runs at a very high speed, the rapidity of production

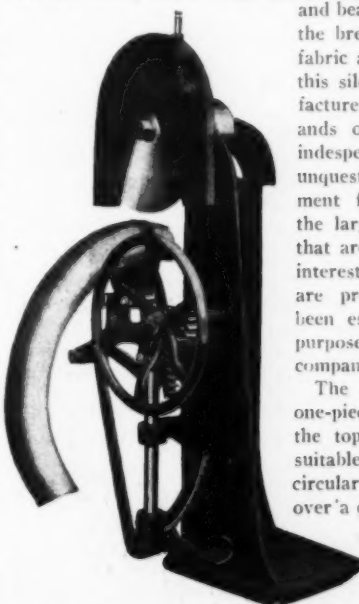
being governed by the size of the piece being punched. In standard No. 8 and No. 9 soles the production, using the full width of the machine, will be 1,380 per minute. In No. 9 and No. 10 standard size heel blanks, the production will be 2,000 per minute.

There is no unnecessary waste in cutting, the dies being so constructed that the scrap is almost entirely eliminated; moreover, the dies can be quickly removed or changed. The machine is regularly equipped with a counter, and a stacking device is supplied as an extra for stacking soles or similar products.

The maximum width of sheets that can be punched is 28 inches, and the approximate floor space, without the stacking table, is 7 feet 1 inch by 8 feet 3 inches, the latter occupying a space 3 feet 10 inches by 5 feet. The machine is driven by either D. C. or A. C. motor. [The Malm Machine Co., Dayton, Ohio.]

TIRE SECTION CUTTER.

There is only one way to show a prospective buyer the construction of a pneumatic tire, and that is to exhibit a section of the actual shoe. The construction of the tread, side walls



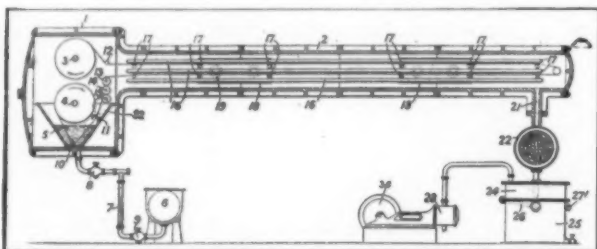
and beads, the quality of the stock, the breaker and plies of building fabric are all disclosed at once by this silent salesman. Every manufacturer of tires turns out thousands of these samples that are indispensable to the salesman and unquestionably a good advertisement for the tire. Considering the large number of tire sections that are distributed annually, it is interesting to know just how they are produced. A machine has been especially designed for this purpose and is shown in the accompanying illustration.

The construction embodies a one-piece pedestal and frame, on the top of which is mounted in suitable bearings, a belt driven circular knife. The shoe is placed over a cast iron block, conforming to the inner contour of the casing and held rigidly in place by a treadle-operated flexible band mounted on a vertically sliding frame. By means of a hand wheel and a rack and pinion movement, the sliding frame is raised and a section of the shoe is severed by the revolving knife. Thus, samples of any width may be quickly and evenly cut, the width being determined by an adjustable gage. [The Akron Rubber Mold & Machine Co., Akron, Ohio.]

MACHINERY PATENTS.**MACHINE FOR IMPREGNATING FABRICS.**

THIS invention relates to apparatus for impregnating textile fabrics with solutions containing volatile constituents, and consists in an impregnating-chamber having a communicating drying-chamber so constructed that a vacuum may be maintained in both chambers. An impregnating-chamber 1, having an impregnating-tank 5, suitably-positioned anti-friction rollers 3, 4, 10, 12, 13, 14, 15, and scrapers 11, is in communication with a drying-chamber 2 having steam-chests 16 and anti-friction guide-rollers 17. Inspection doors 18 and windows 19 are provided in the drying-chamber 2, and an inspection window 32 is provided in the chamber 1. One end of the drying-chamber 2 communicates by a passage 21 and condenser 22 with a receiving-tank 24, which is connected to a pump 28 whereby a vacuum may be

created in the chambers 1, 2. The receiving-tank 24 communicates by a valved connection 26 with a storage tank 25. The impregnating-tank 5 communicates by valved connections 7, 8, 9 with a storage reservoir 6 for the impregnating-fluid, which flows into the tank 5 when a vacuum has been created in the chambers 1, 2 and the valves 8, 9 are opened. The fabric to be treated is placed on the roll 3 and its end connected to a suitable leader belt. The apparatus is closed, the rollers 3, 4 suitably rotated, and the pump 28 set in operation, thereby drawing the fabric through the drying-chamber, around the rolls 13,



14, 15 through the impregnating-liquid, and winding it upon the roll 4. The direction of rotation of the rolls 3, 4 is then reversed and the dried impregnated fabric rewound upon the roll 3. The evaporated solvent is condensed in the condenser 22 and collects in the tank 24, from which it is allowed to pass, by opening the valved connection 26, to the tank 25, from which it may be withdrawn after breaking the vacuum by opening a cock 27. [J. D. Taylor, Australia House, Strand, London, and F. Shaw & Co., Bradford, Manchester, both in England. British patent No. 106,805.]

TIRE BEAD TRIMMING MACHINE.

The removal of tire beads from old casings for the purpose of resoling or preparing the tire for reclaiming, as the case may be, is the object of the present invention. The machine is shown

in side elevation and the position of the tire being operated on is indicated by dotted lines. The base *A* supports the belt-driven shaft *B*, to which are geared the cutting knife *C*, conical tire gripping roller *D*, bead roller *E* and a conical driving roller, not shown, that operates within the casing directly opposite the bead roller. The casing is guided and supported by inside rollers *F* and *G*, outside bead rollers *H* and *I* and outside supporting rollers *J* and *K*. These rollers are all adjustable to the size and type of casing to be trimmed. The power-driven cutting knife and the conical driving roller are adjusted by suitable handwheels, while the bead driving roller is controlled by a ratchet and pawl operated lever.

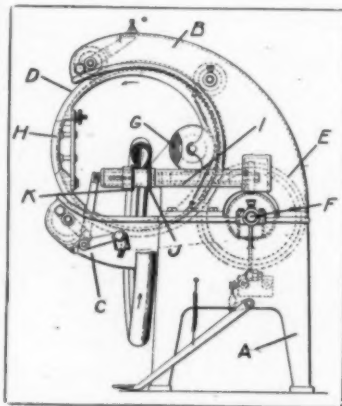
In operation the guiding and supporting rollers are adjusted to the size of the casing and the cutting mechanism is raised to permit the tire being placed over the conical driving roller. The adjustable driving rollers are then swung into place and the cutting knife brought downward in operative position. When power is applied the casing revolves, water is applied to the revolving knife from an overhead tank and the bead is severed from the carcass. The tire is then reversed and the remaining

bead is removed in the same manner. [Bert E. Maxwell, Wichita Kansas. United States patent No. 1,236,963.]

PAPER WRAPPING MACHINE FOR TIRES.

This invention relates to machines for placing spiral wrappings of paper strip around finished tires to prevent them from being soiled or otherwise damaged. The illustration is a side elevation

of the machine, showing a tire shoe, partly broken away, and in position for being wrapped. The base *A* supports two curved sections *B* and *C* between which rotates the ring-shaped shuttle *D*, driven by friction wheel *E* from the main shaft *F*. A roll of paper strip *G* is mounted on the shuttle that is also provided with a removable gate *H* through which the tire is introduced. Two parallel sleeves, one of which is shown at *I*,



enclose two shafts driven by worm gearing from the main shaft. Mounted on the opposite ends of these shafts are hubs provided with two pairs of flanges *J* and *K*, between which the tire is gripped by a lever-controlled sliding action of the outer flanges *K*. These flanges are slightly staggered in their relative positions so that the rotating shuttle will wrap the paper strip evenly around the slowly revolving tire. [Thomas Midgley, Worthington, Ohio, assignor to Morgan & Wright, Detroit, Michigan. United States patent No. 1,238,318.]

OTHER MACHINERY PATENTS.

THE UNITED STATES.

- 1,237,422. Machine for studding tire bands, treads, and similar purposes. W. A. Turpin, London, and D. G. Snodgrass, Birmingham, assignors to The Dunlop Rubber Co., Limited, Birmingham—all of England.
- 1,237,471. Method of preventing rubber treated fabric from sticking to the liner strip. E. B. Cederstrom, assignor to Morgan & Wright—both of Detroit, Mich.
- 1,237,810. Guiding device for paper wrapping machines. F. M. Pierce, assignor to Pierce Wrapping Machine Co.—both of Chicago, Ill.
- 1,237,811. Adjusting mechanism for paper wrapping machines. F. M. Pierce, assignor to Pierce Wrapping Machine Co.—both of Chicago, Ill.
- 1,238,648. Rubber boot repairer. C. F. Dilks, assignor of one-half to W. Carll—both of Bridgeton, N. J.
- 1,239,019. Wrapping machine. N. I. Lloyd, Butte, Mont.

THE UNITED KINGDOM.

- 107,073. Electric cable machine. C. J. Beaver, "Rangemoor," Crescent Road, Hale, and E. A. Claremont, Broom Cottage, High Leigh—both of Cheshire.
- 107,173. Mold for hollow articles. J. T. Brierley, W. Timperley, and Leyland & Birmingham Rubber Co., Golden Hill Works, Leyland, Lancashire.
- 107,701. Solid tire mold. W. & A. Bates, and J. Healy—both of St. Mary's Mills, Leicester.

THE DOMINION OF CANADA.

- 177,302. Non-skid tread mold. J. E. Hauvette, New Brunswick, New Jersey, U. S. A.

THE FRENCH REPUBLIC.

- 483,360 (November 6, 1916). Machine for the manufacture of tire casings. The Miller Rubber Co.

AUSTRALIA.

- 2,655 (December 1, 1915). Device for joining rubber tubes with mandrel. F. H. Hall, England.

PROCESS PATENTS.

THE UNITED STATES.

- 1,237,554. Vulcanizing rubber by electricity. R. B. Price, New York City, assignor to Rubber Regenerating Co., Mishawaka, Ind.
- 1,239,291. Process of making material for puncture proof tires. G. O. Morse, Des Moines, Iowa, assignor of one-sixth to A. M. Linn, one-sixth to D. Jarvis, and one-sixth to W. W. Horraa.

THE UNITED KINGDOM.

- 106,746. Self-sealing tire tube. I. B. Jeffries (trading as I. Benjamin), 3 John street, Llanelli, Carmarthenshire.

AUSTRALIA.

- 2,712 (December 1, 1916). Process for waterproofing fabric. A. O. Tate, Canada.

New Goods and Specialties.

"KAMP KOMFORTS."

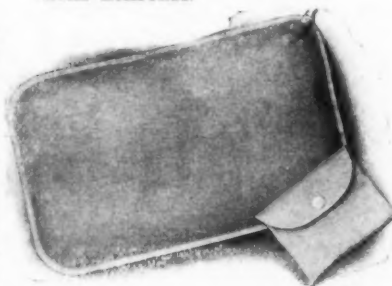
HOW to camp out at home or abroad and remain both comfortable and clean is a weighty problem, but here are three hints which should prove helpful: The "Khaki Komfort Kusion" supplies one much felt want,

the soft pillow adding a home touch to this rather strenuous life whenever a weary camper seeks repose. The cushion is air inflated, and ranges in size from 12 to 18 inches. It is extremely compact, and may be put in an envelope and tucked away in any available pocket. Incidentally, it is excellent as a back or shoulder rest when traveling. Two other "Kamp Komforts" are the wash basin and the self-adjusting English bath tub.

Both these articles are of khaki "cloth-white," rubber lined, and have steel ribs to hold them upright. The basin is 12 inches in diameter, and folds up when not in use, making a small, light package. The bath tub varies in size from 12 to 30 inches at the base, and is packed in a bag. [Hodgman Rubber Co., Tuckahoe, New York.]

"CONCEAL'O" FOR BATHROOM OBJECTIONABLES.

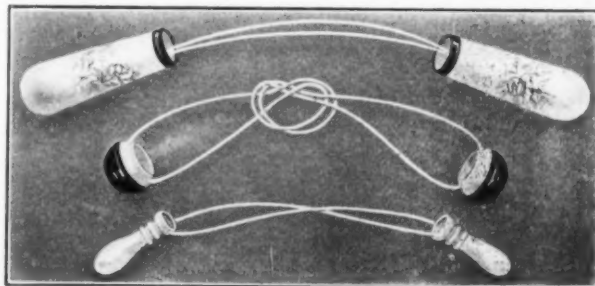
A welcome addition to bathroom accessories is here shown. As its name indicates, the first purpose of this attractive looking folder is to conceal successfully all "objectionables" from the public eye—such articles as syringes, hot-water bottles, face cloths, etc., being comfortably accessible but unobtrusive. "Conceal'O" comes in dainty patterns of cretonnes and silks in any coloring desired, and, being rubber lined, insures protection against dampness. As the illustration indicates, the articles inserted in the folder are suspended on hooks, thus allowing for the orderly arrangement of many necessities, and the cover fastens with snappers. "Conceal'O" may be used when traveling, as well as



at home, for it occupies comparatively little space and can be rolled up with the articles inside. [The Stern Specialty Co., 40-42 East Twenty-second street, New York City.]

A NOVELTY FOR KNITTERS.

In these days of wartime knitting, when every feminine patriot carries a bag from which protrude needles of amber or ivory, the needle "protector" is undoubtedly a timely suggestion. This novelty is made of celluloid, wood or bone, and comes in a number of styles and shapes—from dainty, hand-painted flower designs to less elaborate but equally effective patterns in black and



white. As the illustration shows, the tips are joined together by two elastic bands, thus guarding against the possibility of their being lost and allowing the necessary space, in case part of the garment separates the needles. [The Oriart Co., 333 Fourth avenue, New York City.]

FOR LAWN BOWLING.

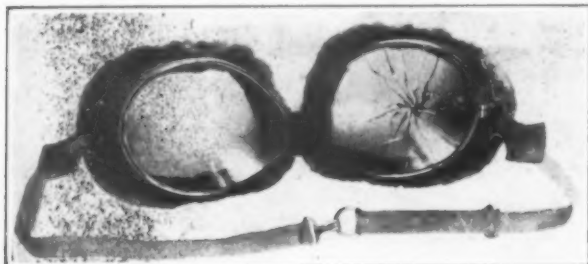
Manufacturers must prepare long in advance for seasonable goods, and although lawn bowling is over for this year preparations are already being made for supplying the needs of next spring and summer. Lawn sports, including bowling, croquet and similar games, require a firm footing for the player, and to enable participants in these games to maintain this firm footing upon the grassy lawns a special lawn bowling rubber is being made. This is to all intents and purposes a rubber sole, held on the ordinary walking boot by means of an ornamental tip and a high quarter, or counter, of rubber. This is not only effective for the purpose, but is quite ornamental and will undoubtedly commend itself to devotees of outdoor games. [Canadian Consolidated Rubber Co., Limited, Montreal, Canada.]



THE "RESISTAL" GOGGLE.

A new protective goggle used in the U. S. Army Aviation Corps has an unusually comfortable frame in which a cushion of rubber is mounted as a pad, in addition to the customary velvet silk chenille. The lens comprises two layers of optical glass, which may be plain or curved, with a layer of celluloid

interposed, the whole being welded—not cemented—into a solid mass. It is claimed that this "Resistal" glass is not affected by heat, water or cold, and even after it is cracked remains air-



tight and watertight, with no danger from flying particles of glass. [Strauss & Buegeleisen, 37 Warren street, New York City.]

TRI-PLUG NON-SLIP HEELS.

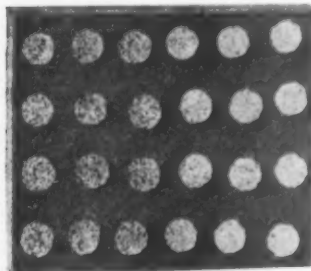
Shoe repairers, in order to be fully prepared for attaching rubber heels, are obliged to carry a complete stock of sizes because of the way in which such heels are usually attached. This makes a heavier expense than many repairers can afford. A new heel has been manufactured which overcomes this difficulty, to some extent, because the nail

holes are placed nearer the center, and thus several sizes of shoe heels can be fitted with a smaller assortment of these rubber heels. A vacuum space at the top enables a tighter fit. The larger sizes of this make of heels contain three non-slip plugs, while the smaller half heels for women's French heel styles contain a single plug at the back, for making the heel wear longer and more evenly, and preventing slipping. [Panther Rubber Manufacturing Co., Stoughton, Massachusetts.]



RUBBER THREAD INSULATION FOR STORAGE BATTERIES.

Hard rubber is the only insulator impervious to the action of sulphuric acid, which is the basic electrolyte in lead storage batteries and for this reason storage battery separator plates are made of this material. A new type of plate that is a radical departure from the ordinary separator has recently been perfected and is here shown.



This is a greatly enlarged section of the rubber threaded insulation showing the numerous threads imbedded in the rubber.

Each white spot is the end of one of the 196,000

threads which pierce the rubber plate from front to back. Each one is in reality only 1-32 of an inch in length and of such small diameter that it is not noticeable to the naked eye. These threads serve as wicks, through which the battery solution is drawn by capillary attraction.

The distinguishing mark of batteries equipped with rubber thread insulation is the letter W inside a double circle. [Willard Storage Battery Co., Cleveland, Ohio.]

THE "HOLDFAST" AND "NEVERSLIP" FINGER DEVICES.

These two ingenious contrivances have recently been placed on the market, as an aid to filing or the handling of bank bills or papers. The "Holdfast," which is made of nickel, rubber and silver, consists of a wide, rounded rubber strip that goes around the finger, narrowing on top to fit a mechanical fastener of metal, with a felt strap underneath for protection against the metal. By this means the encircling band of rubber may be tightened or loosened as desired. The "Never-slip" is of simpler design, being a narrow, rubber covered circlet of metal, which can be bent to fit the finger. Both these appliances work by dry adhesive power and possess obvious sanitary and time-saving advantages over the usual finger-moistening method. They are superior to the familiar "rubber finger," as there is no pressure to cause perspiration or interfere with proper circulation, nor do they break or corrode. [The George H. Rives Manufacturing Co., Woolworth Building, New York City.]



A CUSHION VACUUM HEEL.

This rubber heel has an annular depression surrounded by a slightly raised wall, the latter serving to form a partial vacuum when the heel is pressed down by the action in walking and thus preventing or lessening the slipping of the heel on smooth, oiled or greasy surfaces. In order to more quickly release the suction on raising the foot, the center section is molded to be higher than the surface of the heel and also higher than the wall around the sunken section. This central cushion increases the cushioning effect of the rubber heel and facilitates the action. [A. F. Priest, Chicago, Illinois.]



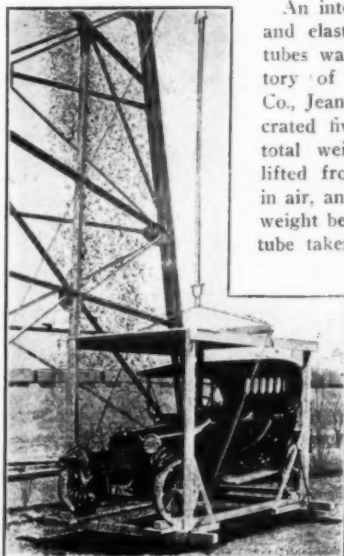
THE "KING" SAFETY HELMET FOR AVIATORS.

In these days of thrilling air battles, when every detail of the aviator's costume must be considered with a view to its suitability for the dangerous work of flying, no part of the costume is more important than the helmet. The "King" Safety Helmet embodies one of the most recent contrivances for safeguarding our aviators in their flights. This cap is constructed of four-ply sheet cork and gutta percha. It contains two complete helmets, one within the other, the one and one-half inch space between the two being filled with steel wool, which forms an effective protection against possible skull fracture. Contrary to the usual aviation helmet, it is extremely light, in spite of its durable qualities. As seen in the accompanying photograph, the visor



of the helmet extends over the eyes, protecting them from injury. The flaps over the ears have openings, in order that the wearer's hearing shall not be impaired, while the outer ears themselves are fully protected. [Abercrombie & Fitch Co., Madison avenue and Forty-fifth street, New York City.]

REMARKABLE INNER TUBE TEST.



An interesting test of the strength and elasticity of one of its inner tubes was recently made at the factory of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, when a crated five-passenger touring car, a total weight of 2,990 pounds, was lifted from the ground, suspended in air, and lowered again, this entire weight being held by a 37 by 5 inner tube taken from stock. The report is that, "at the conclusion of the test, the tube resumed its normal shape and was critically examined by the committee, who certified in a sworn affidavit, that the tube was in perfect condition and ready for service."

Tests in the factory on a tension machine, while not so spectacular, indicated an even greater strength, the machine registering 3,100 pounds to the square inch.

THE MUNCIE PNEUMATIC TRUCK WHEEL.

This is an all-steel truck wheel, which is provided with the pneumatic tire effect and so constructed that the wearing stresses, punctures and blowouts incidental to the regular pneumatic tire are entirely eliminated.

The outer soled rubber tire rests upon a standard band; between this band and the axle hub there are placed six steel rings rigidly fastened to the band, and to a seventh ring. In the center of this seventh ring there is room for the free movement



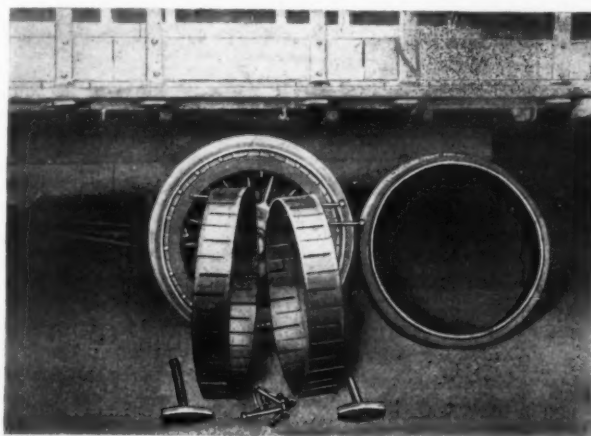
of the axle and axle hub. This steel framework supports the periphery of the wheel—the six steel rings counter-supporting themselves and in turn resting upon the seventh ring.

Inside of each of the six steel rings there is placed an air cushion one-third the diameter of the wheel, composed of a casing and inner tube, the same construction as a regular pneumatic tire, only smaller. In the center of each air cushion there is a metal hub. From the axle hub, extending through the

center of the seventh ring, and free from any contact with it, extend 12 steel arms, six each front and back, a pair to each cushion. These arms are bolted, one end to the axle hub, the other to the center of the air cushion hub. This construction permits both the weight of the car and the load, and the impact of the outside of the tire upon the ground to be equally distributed upon the six air cushions. [Muncie Wheel Co., Muncie, Indiana.]

HOOD SOLID TIRE DEMOUNTABLE RIM.

Every truck owner knows the loss of time incurred when his truck must be laid up to change tires. The trips to and from the service station and the time necessary to change a pressed-on tire represent to the truck owner time wasted. By the use



of the demountable wheel fellows here shown and ordinary pressed-on tires, a truck may be provided with a demountable solid tire equipment.

The device consists of two rings, one within, toward the wheel, which contracts as the two rings are pulled together by the bolts; and the other on the outside, toward the tire, which expands as the two rings are pulled together by the bolts. By simply loosening the bolts, the two rings slide apart and the tire is free from the wheel. [Hood Tire Co., Inc., Watertown, Massachusetts.]

3,512,996 MOTOR CARS REGISTERED IN 1916.

Statistics compiled by the United States Department of Agriculture show that there were 3,512,996 automobiles and motor trucks registered in this country at the end of 1916, a gain of 1,067,332, or 33 per cent over 1915. There were, in addition, 250,820 motor-cycles. This means that there was on that day a car for every 29 persons in the country and 1.4 cars for every mile of public rural road. Distribution varied greatly in the different states, however, Iowa leading with a car to every 11 persons, California with a ratio of 12 and Nebraska and South Dakota following with a ratio of 13 each. Arkansas had only one car to 116 persons and Alabama and Louisiana followed with ratios of 108 and 107 respectively. In respect to cars per mile of rural road, Rhode Island led with 9.8 and Massachusetts and New Jersey followed with 7.3 each. Alabama and Nevada had the smallest mile ratio, namely 0.4.

The total revenue from motor vehicles in the form of registration and license fees amounted to \$25,865,369.75, of which \$23,910,811.00 was available for road work under the direction of local or state authorities, including \$138,676.39 in fines and penalties.

The Editor's Book Table.

THE WATERPROOFING OF FABRICS. By Dr. S. MIERZINSKI. Translated from the German by Arthur Morris and Herbert Robson, B. Sc., 1914, second edition; first edition, 1903. London: Scott, Greenwood & Son. [Octavo, 140 pages, 29 illustrations. Price 5 shillings 6 pence]

THIS book upon a subject of great interest at the present time consists of an index and twelve chapters, as follows: Introduction; preliminary treatment of the fabric; waterproofing with acetate of alumina; impregnation of the fabric; drying; waterproofing with paraffin wax; waterproofing with ammonium cuprate; waterproofing with insoluble soaps of metallic oxides; dyeing waterproof fabrics; waterproofing with gelatine tannin, caseinate of lime, and other bodies; manufacture of tarpaulin; British waterproofing patents. The final chapter is by the translators, who comment intelligently upon certain obvious lapses by the German author.

THE QUEST OF THE LONG STAPLE COTTON. BY W. IRVING Bullard, Manager Textile Department, The Merchants National Bank, 28 State street, Boston, Massachusetts.

The growing interest in the production of long staple cotton will make this brochure of interest to the rubber industry. After a short introductory chapter, the subjects of Egyptian, Sea Island, Arizona-Egyptian cotton and the California cotton fields are treated in a brief and interesting manner. The closing chapters are devoted to the cotton fields of Brazil and Peru, and a few pointed remarks concerning the importance of long staple cotton concludes this very interesting little book. A map is appended that graphically shows the long staple cotton fields of the world and emphasizes our dependence on foreign countries for long staple cotton.

OFFICE ORGANIZATION AND MANAGEMENT. BY CARL C. PARSONS. La Salle Extension University, Chicago, Illinois. [Large 8vo, 313 pages, charts and half-tones, flexible binding.]

This volume, one of a series devoted to various departments of business administration, and written by eminent authorities, fills an important place in business literature because the office is the heart of every business institution, its records determining all executive policies. Its comprehensive scope is indicated by 29 chapters devoted to the following subjects: Organization; laying out the office; employees; training; rules and regulations; discipline; methods of payment; promotions; increasing efficiency; suggestions and ideas; *esprit de corps*; vacations; encouragement of savings; making employees stockholders; pension systems; welfare work; machinery of the office; records and systems; records pertaining to advertising, sales, credits and collections, order department, purchasing orders, stores, shipping and cost accounting; mailing department; supervision; the office manager. The importance of the human element is emphasized throughout, prevailing and exceptional customs being cited and much good advice offered.

EXPORTERS' ENCYCLOPAEDIA, 1917-18. EXPORTERS' ENCYCLOPAEDIA Co., New York City. [8vo, 1,315 pages, cloth. Price, \$7.50, including "The Exporters' Review."]

All firms engaged in export business will find the thirteenth annual edition of this standard reference book invaluable. Not only are general shipping instructions given telling how to pack and mark goods for export, what consular regulations must be followed in regard to bills of lading, which are the best routes to every foreign port, etc., but this information is kept constantly up to date through the medium of "The Exporters' Review," a 56-page monthly magazine, subscription to which is included in the price of the encyclopaedia. Nine hundred pages are devoted to the commercial facts and statistics of the countries of the world, and a wealth of supplementary information to protect the shipper and customer alike from delays, fines and other

annoyances, includes: index of countries, ports, cities, etc.; representative forwarders; foreign postage, money order and parcel post rates; steamship lines and agents; difference in time between New York and the cities of the world; cable rates; foreign import duties; weights, measures and conversion tables; foreign currency; New York branch banks abroad; export commission houses; American consulates abroad; shipping routes from American ports; foreign consulates in the United States.

POOR'S MANUAL OF INDUSTRIALS, 1917. [Cloth, 8 vo, 2,800 pages. Price, \$10.00.] Poor's Manual Co., New York City.

This standard work is too well known to require any extended description. It gives in a reasonably compact form the facts regarding industrial corporations which are needed by investors, bankers, and all others interested in industrial securities. The information is revised up to August 1 of this year, and gives the latest income accounts and balance sheets to that date. As these details are given in comparative form, they show the progress of the business. A large number of concerns devoted to rubber manufacture or to auxiliary industries, are included in this comprehensive list of United States and Canadian corporations.

STUBBS BUYERS' DIRECTORY FOR THE WHOLESALE DRUG, Chemical and Allied Trades. Alfred Stubbs, New York. [Octavo, 372 pages, bound in buckram. Price \$3.00.]

An established institution, this well-arranged directory is an authoritative guide for buying the many materials handled by the trades mentioned in the title. A separate section gives the names and proprietors of a large number of pharmaceutical specialties, and a list of manufacturers and importers of goods usually sold by the drug and chemical trades. It naturally includes a list of the manufacturers or wholesale handlers of a large number of chemicals and materials used in the manufacture of rubber goods.

NEW TRADE PUBLICATIONS.

THE Canadian Consolidated Rubber Co., Limited, Montreal, Canada, is just sending out its regular fall number of "Foot-Prints," which is the catalog of canvas upper rubber soled shoes. It is a handsome booklet of 32 pages, and gives excellent half-tones and descriptions of the many styles of tennis shoes, work shoes and bathing shoes manufactured by that company. It is printed in colors, the tan uppers and the red rubber soles being graphically shown in their natural colors. As a specimen of trade catalog it is worthy of special attention.

* * *

The B. F. Goodrich Co., Akron, Ohio, is sending out a well illustrated pamphlet giving much valuable information regarding truck tires of its manufacture, together with many photographic reproductions showing the effects of overloading or other abuses of truck tires. The pamphlet is well illustrated and gives many facts of value to all who use motor trucks in their business. Another pamphlet describes a large number of devices that make for motor truck efficiency, and still a third pamphlet entitled "Which?" explains the advantages of motor truck delivery over horse haulage.

* * *

"Bridge's Sisal and Other Fiber Decorticating or Scutching Machinery" is the title of a 64-page booklet published by David Bridge & Co., Limited, Castleton, Manchester, England. Although the object of this work is to picture and describe the machinery for this purpose made by the above well-known house, it contains a remarkable amount of information regarding the plants which

furnish cordage fibers, their habitat, manner of preparation for the market, etc., from the pen of Frederic A. G. Pape, the inventor of the machines shown. Other illustrations show phases of the growth of the plants and establishments in British East Africa, where these cordage fibers are produced. The publishers will send copies to interested parties on request.

A descriptive price list of Francke Flexible Couplings, heavy pattern type, has been issued by Smith-Serrell Co., Inc., 90 West street, New York City. This ingenious device for direct connected machinery of every sort eliminates misalignment troubles, such as friction, vibration, noise, bearing wear and shaft breakage, and saves operating trouble and expense. The heavy pattern type is particularly well suited to rubber rolling mills, crushing and grinding machinery.

William H. Scheel, 159 Maiden Lane, New York City, dealer in rubber chemicals and ingredients, has issued a new buyers' directory of the various chemicals and compounding ingredients handled by this well-known house for the rubber trade.

"Will You Help Improve Transportation to Win the War?" is the title of an article by Raymond B. Price, vice-president of the United States Rubber Co., New York City, which every public spirited man should read. It points out the necessity of developing our river, lake and coastwise shipping, independent of our railway systems; the disastrous results of railway monopolies; the advantages of economical electric power for railways with power houses at coal mine mouths, and the need of a uniform system of Federal highways permitting the development of a great motor truck carrier service. Copies of this leaflet for distribution may be obtained from the Patriotic Education Society, 806 Seventeenth street, Washington, D. C.

In these troublous times when enormously increased production and maximum efficiency are the aims of industry, and American business men must read as never before to keep abreast of war progress, which makes giant strides over night, "The Nation's Business" is particularly welcome among the month's periodicals. It is not merely "another magazine" but a service performed by its publisher, the Chamber of Commerce of the United States of America, Washington, D. C., which is in close contact with the several departments of the government and also 400,000 business men in all parts of the country. It is, therefore, in a position to present to its readers every month information unobtainable from any other source. A handsome 52-page paper 9 1/4 x 12 inches on coated stock and profusely illustrated, it is well worth the subscription price, \$2 a year. America's best known public men and writers are its contributors and their articles cover the whole length and breadth of business activity.

JUDICIAL DECISIONS.

MILLER RUBBER CO. v. BEHREND & ROTHSCHILD, Circuit Court of Appeals, Second Circuit, February 28, 1917.

The Miller Rubber Co., manufacture a toy balloon that resembles a watermelon in shape and coloring. This was the invention of Ferdinand F. Brücker, who assigned his rights to the company. Behrend & Rothschild manufacture a balloon resembling in all respects the balloon of the above company, which claims that Behrend & Rothschild have infringed their letters patent and furthermore charge them with unfair competition. The court adjudged that when there was no proof that they knew of the circumstance, also the fact that one was the first to manufacture a balloon like a watermelon, does not make its manufacture and sale by another unfair competition when there is no attempt to deceive by imitating marks, labels, etc.

In regard to the patents, it was decided that they were void

because lacking in invention. The decree in favor of defendants passed by the District Court of the United States for the Southern District of New York, from which complainants appealed was, therefore, affirmed. [Federal Reporter, Vol. 242, page 515.]

NATIONAL METAL MOLDING CO. v. TUBULAR WOVEN FABRIC CO., Circuit Court of Appeals, First Circuit, December 21, 1916. The Tubular Woven Fabric Co. had constructed a flexible electric conduit which had been adjudged an infringement of a patent of the National Metal Molding Co. They subsequently made another conduit, which the complainants claimed was identical with the first and therefore an infringement of the same patent. The District Court of the United States for the District of Rhode Island, before which the case appeared, dismissed the supplemental bill of the plaintiff on the ground of non-infringement. From this order, the National Metal Molding Co. appealed. The Circuit Court affirmed the judgment of the District Court and decided that appellee was entitled to costs of appeal. [Federal Reporter, Vol. 239, page 907.]

RUBBER TRADE INQUIRIES.

THE inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The editor is therefore glad to have those interested communicate with him.

[327.] An inquirer wishes to know in what way and to what extent benzoic acid is used as a compounding ingredient.

[328.] A correspondent desires information on the subject of converting old inner tubes into sponge rubber strips.

[329.] A manufacturer wishes to know where he can dispose of cases and boxes in which wild and plantation rubber is received.

[330.] An inquiry for the name of a firm manufacturing rubber stamp vulcanizers.

[331.] A correspondent inquires for the name of a dealer in nails for attaching rubber heels.

[332.] The name of the manufacturer of "Akroide" is requested.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.*

A man in the Netherlands wishes to purchase medium priced suspenders. Report No. 25,264.

A commission merchant in Spain seeks an agency for the sale of belting. Report No. 25,329.

A firm in Italy wishes to buy or obtain an agency for the sale of automobile accessories of all kinds. Report No. 25,336.

A firm in Spain desires to represent American manufacturers and exporters of scientific equipment, diving and submarine apparatus, hose and firemen's appliances, and hygienic goods and disinfecting apparatus for hospitals, etc. Report No. 25,302.

A company in Denmark desires to purchase 200,000 pairs of rubber shoes of good and medium quality. Report No. 25,308.

Representation for rubber goods is desired by a man in France. Report No. 25,294.

An agency for the sale of automobile and bicycle tires and accessories is sought by a commission merchant in Spain. Report No. 25,349.

A man in France wishes to secure an agency for the sale of rubberized fabrics. Report No. 25,356.

A merchant in Canada wishes to purchase rubber for tires on baby carriage wheels. Report No. 25,357.

A firm in Spain wishes to purchase and secure the sole agency for the sale of bicycle tires and rubber goods in general. Report No. 25,362.

A firm in Italy desires to purchase garters. Report No. 25,397.

*In considering the above opportunities it should be remembered that export licenses are required.

The Obituary Record.

AN OLD-TIME RUBBER SHOE MAN.

GEORGE HATCH QUINCY, for many years identified with the rubber business, died at the Hotel Somerset, Boston, Massachusetts, on September 4, in his eighty-fourth year. He was born in Boston, March 4, 1834, the son of Captain Samuel and Mary Hatch Quincy.



GEORGE HATCH QUINCY.

On completion of his education in the public schools of that city, he entered the wholesale shoe business, being successively employed by the old-time leading Boston firms of William Claflin, Coburn & Co., Johnson Rust & Co., and Houghton, Coolidge & Co. This last firm became selling agents of the Para Rubber Shoe Co., Framingham, Massachusetts, and Mr. Quincy devoted his time mainly to that branch of the firm's business.

When the Para company discontinued business, he was appointed manager of the Boston selling agency of the Candee Rubber Co., and when that company was consolidated with the United States Rubber Co., the Bourne Rubber Co. of Providence, Rhode Island, made him its Boston selling agent. At one time he was a member of the First Corps of Cadets, the crack military company of Boston. He retired from active business a number of years ago, and went to Europe, for some time living in Switzerland, where his daughter resided. After his return, Mr. Quincy became house manager of the Algonquin Club of Boston, and later he resided at the Hotel Vendome and the Hotel Somerset. Failing in health he grew feeble during his last years. He is survived by two daughters, Mrs. Richard W. Peters, and Mrs. Henry Gilman Nichols, both of Boston.

AN EMINENT BRITISH RUBBER CHEMIST.

Clayton Beadle, well known in connection with rubber chemistry, died at his residence at Sidcup, Kent, England, on August 16 at the age of 49. He was widely known for his research in cellulose and rubber, and was an early investigator in the manufacture of cellulose with C. J. Cross and E. J. Bevan, analytical chemists, his name appearing upon the original viscose patent. His wife was the daughter of Andrew Pears of the Pears family, who were among the pioneers in the rubber planting industry. Mr. Beadle was a director in the Lanadron Rubber Estates, Limited. Later he formed a partnership with Dr. H. P. Stevens, and devoted himself to research work in the rubber industry. The investigations of these two men have been of great value to rubber planters and manufacturers, and many of their discoveries have been advantageously utilized in the industry. He was the author of a number of books on technical subjects and an active or honorary member of several chemical and scientific societies. Among the honors bestowed upon him may be noted the gold medal of the Société pour l'Encouragement

de l'Industrie Nationale, the silver medal of the Royal Society of Arts, and the Scott Legacy Medal and Premium of the Franklin Institute.

LONG AND FAITHFUL IN SERVICE.

Walter F. Medding, for 37 years in the employ of the Boston Rubber Shoe Co., Malden, Massachusetts, died at his home in that city, September 14. Mr. Medding was a native of Malden, born 54 years ago on the site of his late residence. After graduating from the Malden High School, he entered the office of the Boston Rubber Shoe Co. and rose to the position of paymaster, which office he held for 30 years. A short time ago he became almost totally blind and it was hoped that a recent operation would restore his sight. It is believed that worry about this hastened the end.

Mr. Medding was one of the best known Masons in New England, having attained the 33rd degree, and held high offices in various Masonic bodies. He was a member of the Universalist church. He is survived by a wife and one son. Mr. Medding was held in high esteem by the officers, and all employed at the rubber factory, and hosts of friends will mourn his loss. Funeral services, in accord with the wishes of the family, were very simple and were held at the Universalist church, being largely attended by leading Masons of New England, business associates and other friends.

PIONEER MAKER OF RUBBER PLASTERS.

Dr. John M. Grosvenor, widely known as a chemist and one of the first to manufacture rubber porous plasters in Boston, died September 20, at his home in Middleton, Massachusetts. He was born in Danvers, Massachusetts, in 1839, and was a graduate of Dartmouth College and Harvard Medical School. He served in the Civil War as an assistant surgeon. Four years ago, after a residence of many years in Swampscott, Dr. Grosvenor purchased a farm at Middleton. Although he had held membership in many clubs and medical and other organizations, he had retired during the past few years from all except the Masonic fraternity.

MADE A FORTUNE IN RUBBER STAMPS.

Edwin Reynolds, for many years a manufacturer of rubber stamps at Providence, Rhode Island, died at Ledyard, Connecticut, September 4, aged 69 years. He was a bachelor, of kindly disposition and interested in nature study. Through the probating of his will, it became known that he was possessed of about \$85,000, a large portion of which he left to charity. A few private bequests are made and a number of trust funds created for charitable purposes, the residue of the estate, if there is any, being left in trust for the National Association of Audubon Societies, New York City.

A FORMER TIRE COMPANY MANAGER.

Charles W. Dailey, Jr., for many years associated with the Hood Rubber Co., Watertown, Massachusetts, died at Monrovia, California, on August 31, aged 37 years.

He was born in Cambridge, Massachusetts, June 24, 1880, and received his education in the public schools and at Burdett Business College. Following his graduation he went to Europe where he enjoyed an extended vacation, and on his return in 1901 entered the employ of the Hood Rubber Co. as a stenographer. In a short time he was placed in charge of the cost department, and when the Arrow Rubber Co. was formed he

was given the management of the business, which was the manufacture of the Arrow brand of goods and their sale direct to the retailer. On the discontinuance of the Arrow Rubber Co. as a separate concern, he was appointed manager of the Hood Tire Co.

Becoming affected with tubercular trouble about four years ago, he gradually grew worse, and feeling that a respite from business was necessary he retired and went to California, where he died.

Mr. Dailey was formerly president of the Winsor Club of Watertown, Massachusetts. He is survived by a widow and two children.

KNOWN IN THE CRUDE RUBBER TRADE.

George T. Singleton, who has been with Albert B. Beers, broker in crude rubber and commercial paper, 68 William street, New York City, for the past 16 years, died of typhoid fever at his home in Hackensack, New Jersey, September 24, aged 36 years. Prior to his connection with Mr. Beers, he was for some three years with Messrs. Earle Bros., one of the oldest houses in the rubber brokerage line. He had many friends in the crude rubber trade by whom he will be long remembered. He leaves a widow and one daughter.

A NORTHWESTERN TIRE SALESMAN.

Stanley F. Richardson, a salesman at Portland, Oregon, for the Firestone Tire & Rubber Co., Akron, Ohio, was instantly killed near Roseburg, Oregon, September 4, in an automobile accident. He had been connected with the Firestone company about three years and was regarded as one of the most efficient tire salesmen in the Northwest. He leaves a widow.

GOVERNMENT STANDARDS HAVE CHANGED.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

DEAR SIR:—Regarding the recent large order given by the United States Government for 195,000 pairs of 15-inch arctics, a reference to one of the early incidents in this manufacture may be interesting.

It was in the eighteen seventies, when one of the present old shoe companies enjoyed this business, that our customer in Philadelphia became ambitious to share in the emoluments, and asked us to furnish a sample and a price for him to use against an impending bid. The official at the Philadelphia Arsenal refused to lend us the government sample to go by, laying great stress on its sacred character as government property which must not go out of his possession for a minute. We were free to make drawings, take measurements and descriptions, but our goods must conform to the government standard in every particular, etc. The other company, suspecting no competition, very commendably bid a very high price, and ours being very much lower, the contract was awarded to us. The quantity was very small, as compared with 195,000 pairs.

As these arctics had soles about a quarter of an inch thick, it was difficult for us to run the stock solidly on the wide calender we then had. The result was, the first day's work on the contract was badly damaged, some of the soles having blisters as large as silver dollars. The packer was directed to throw out the worst of them, and to put up the best of the damaged, with the perfect ones for shipment.

A few days after these goods were forwarded to Philadelphia we received notice of rejection, as we anticipated. An interview with the inspector developed the fact that our competitor had viewed the goods, and had called attention to the blisters. We were sternly asked whether we expected the government to accept "seconds." We said:

"Why, yes. Our bid was for 'seconds.'"

"You bid on 'seconds'! What do you mean by that?"

"Captain, isn't it a fact you knew nothing about 'seconds' until a disappointed competitor, who has been overcharging you for years, came here and told you about them? It is clear he has been supplying you with 'seconds' himself, for your sample is a

'second,' and has two very considerable blisters on the sole. You insisted that our goods should be exactly like that sample, and we did our best to meet the conditions. We haven't got the blisters precisely in the same places, but in good faith we are giving you the blisters just the same."

The captain, rather worried, sent for the sample, and sure enough there were the blisters.

"Now, captain, I don't see how you can reject the goods. You can send back the perfect ones, if you wish, but the others you should keep, because our price was based on 'seconds,' according to your sample, and not on 'firsts.' We shall claim we have made 'good delivery.'"

After considerable talk of this kind the arctics were accepted, saving the most badly damaged; our packer having sent every pair to clear his tables. It was also agreed that he should be sent down to the Arsenal to select those very much worse than the sample, and to return them to the factory. PIONEER.

ONE BILLION GALLONS OF SYNTHETIC GASOLINE IN 1918.

In a paper read at the Kansas City meeting of the American Chemical Society, April, 1917, Walter F. Rittman states that one-fifth of the 3,000,000,000 gallons of gasoline to be produced in the United States in 1917 will be made by cracking, and that the market value of this synthetic gasoline would supply the Navy with ten superdreadnaughts. About two-thirds of this enormous output will be consumed by the 4,000,000 automobiles now in operation in the United States, which is about five times the total number of cars for the rest of the world. The gasoline and tire items of America's annual automobile bill are about equal, and reach approximately \$500,000,000. The remaining third of American gasoline production is consumed through exportation, motor boats, motorcycles, farm engines, cleaning establishments, chemical and other industrial establishments, principally rubber.

Automobile manufacturers believe that the saturation point will not have been reached until 10,000,000 cars are in operation in the United States, which would call for two and one-half times the present gasoline production. Statistics are quoted to show that during the past seven years an ever-increasing production of gasoline from a relatively constant production of crude oil has obviously been accomplished by (1) taking a larger portion of motor fuel from the crude oil and calling it gasoline, and (2) by producing gasoline from heavier oils by cracking. The Baumé gravity of gasoline has already declined from the seventies to the fifties, but, with fuel below 50 degrees, present carburetors will not work efficiently. Many substitute motor fuels have been tried with great success, but high cost or inadequate supply have prevented their general use. Kerosene carburetors have yet to be perfected. At present the load is falling upon cracked gasoline, and while it has not materially reduced the retail selling price it has prevented its going 10 cents a gallon higher. Fully 600,000,000 gallons of cracked gasoline are being produced this year, the output by this method will probably reach 1,000,000,000 gallons in 1918, and by 1920 more may be produced by cracking than by all other methods.

The chemical phenomena involved in the cracking of heavy oils into lower boiling oils have been discussed in considerable detail in Bulletin No. 114, United States Bureau of Mines. Broadly speaking, and without consideration of relative merits, cracking processes may be classified under the five heads:

- (a) Liquid condition processes wherein oil is cracked as a liquid;
- (b) Gaseous condition processes wherein oil is cracked as a gas;
- (c) Processes wherein cracking is aided through the use of catalyzers;
- (d) Processes where the oil is mixed with steam, hydrogen, or other materials;
- (e) Combinations of the above four methods.

The Rubber Association of America.

EXECUTIVE COMMITTEE MEETINGS.

THE executive committee met at the Whitehall Club on August 29, those present being Harvey S. Firestone, chairman; George B. Hodgman, Van H. Cartmell, William E. Bruyn, H. Stuart Hotchkiss and Secretary Vorhis.

It was voted to increase the membership of the Rubber Advisory Committee by the addition of a member familiar with the export situation, and the Foreign Trade Division was asked to recommend one of their number. At a meeting of that division, held the next day, Edward H. Huxley, president of the United States Rubber Export Company, Limited, was recommended for membership in the advisory committee.

Charles Neave, of Fish, Richardson & Neave, the well-known legal firm of New York and Boston, was appointed general counsel of the association.

The executive committee met again on September 18 at the Union League Club, those present being Harvey S. Firestone, chairman; George B. Hodgman, William E. Bruyn, Van H. Cartmell and the secretary.

FIRM MEMBERS WITH REPRESENTATIVES.

The following firm and associate members were elected: Dural Rubber Corp., Edgar H. Wilson, Flemington, New Jersey.

Rex-Hide Rubber Manufacturing Co., Merrill N. Davis, East Brady, Pennsylvania.

Pearce Rubber Corp., Robert M. Pearce, 932 North Broad street, Philadelphia, Pennsylvania.

The Polson Rubber Co., H. B. Polson, Cleveland, Ohio.

Vernon Metals & Produce Co., R. Wolf, 25 Beaver street, New York City.

ASSOCIATE MEMBER.

Frederick Pusinelli, Arnold & Zeiss, 277 Broadway, New York City.

BOARD OF DIRECTORS' MEETING.

A meeting of the Board of Directors of the Association was held at the Union League Club September 18, those present being Harvey S. Firestone, chairman; William J. Kelly, W. O. Rutherford, Charles T. Wilson, C. A. Daniel, William E. Bruyn, Tracy S. Lewis, J. A. Lambert, J. S. Lowman, Van H. Cartmell, former presidents A. O. Bourn, Henry C. Pearson, Frederic C. Hood, George B. Hodgman, and Secretary Vorhis.

The recommendation of the Foreign Trade Division that Edward H. Huxley, president of the United States Rubber Export Co., Limited, be appointed to membership in the Rubber Advisory Committee, was accepted and his appointment duly confirmed.

A GOLF TOURNAMENT PLANNED.

It was voted to hold a golf tournament this fall, which would be open to all members of the association, with the thought that such a tournament might become an annual event. J. A. Lambert, one of the directors, extended an invitation to hold the tournament at the Trenton Country Club, Trenton, New Jersey, on Tuesday, October 16.

The local Rubber Manufacturers' Association will arrange for the dinner to be served by the Trenton Country Club. Automobiles will meet the various trains and special arrangements will be made to meet and care for the guests.

Those who wish to enter the tournament should apply for particulars to Secretary Vorhis by October 8. Suitable prizes will be awarded.

The entrance fee of \$5, which covers the use of the golf course and dinner, will leave a surplus which will be devoted to a tobacco fund for the American soldiers in France.

CHANGES AND APPOINTMENTS.

The board of directors accepted the resignation of M. L. Cramer, formerly of the Michelin Tire Co., from the committee on arbitration, and Van H. Cartmell, president of the Kelly-Springfield Tire Co., New York City, was appointed to succeed Mr. Cramer on that committee.

THE MIDWINTER BANQUET.

It was decided to hold the next banquet of the association on Monday, January 7, 1918, in the grand ball room of the Waldorf-Astoria. This date is during automobile show week. Plans have already been made to make this midwinter dinner a patriotic rally that will go on record as being the greatest event ever held by the association. A much larger attendance is expected than that of last year, and an attractive program is promised that will be of special interest to the trade.

THE RUBBER RECLAIMERS' OUTING.

A meeting and outing of the Rubber Reclaimers' Division was held on September 21 at the Sea View Golf Club, Absecon, New Jersey. Those present were F. H. Appleton, of F. H. Appleton & Son, Inc., Boston, Massachusetts, chairman of the division; J. S. Lowman, Philadelphia Rubber Works Co., Akron, Ohio; R. B. Caverly and F. M. Camp, Corona Rubber Reclaiming Co., Germantown, Philadelphia, Pennsylvania; E. A. Anderson, Rubber Regenerating Co., Naugatuck, Connecticut; A. D. Thornton, Rubber Regenerating Co., Montreal, Canada; Clark W. Harrison, of the Bloomingdale Rubber Co., New York City; E. H. Brooks, Goodyear Tire & Rubber Co., Akron, Ohio; Clarence H. Low, United States Rubber Reclaiming Co., New York City; Samuel H. Dodd and Seymour L. Dodd, Pequannoc Rubber Co., Butler, New Jersey, and Secretary H. S. Vorhis.

An excellent luncheon was enjoyed at the club house, where the meeting was held, and afterwards the guests took advantage of the fine golf grounds, and many exciting matches were played off. Dinner was served in the evening. Several members stayed over Saturday for the golfing. The courtesy of the club was extended through a member, R. B. Caverly, president of the Corona Rubber Reclaiming Co., to whom a vote of thanks was extended.

MECHANICAL GOODS DIVISION.

At the Mechanical Goods Manufacturers' Division meeting, held on September 11, there was a good attendance and considerable business of a routine character transacted.

CHILD LABOR LAW.

The secretary has sent to all members a circular signed by the legislative committee, explaining the requirements of the new Child Labor Law, together with the regulations which have been adopted for its enforcement, and forms of guaranty necessary to comply with the requirements of the act.

PATRIOTIC FUND.

The circular sent out June 1, announcing that the annual midsummer outing would be omitted this year, and soliciting contributions from the members, to be used for patriotic purposes, has not met with a large response. Up to September 21 but 60 contributions, amounting to \$1,595 had been received.

OXIMONY—RED OXIDE OF IRON.

Red oxide of iron has been in common use for red goods almost from the beginning, but the impurities and other deleterious qualities of ordinary grades are potent disadvantages in the production of certain goods. Domestic manufacturers have promptly responded to the increasing demand for purer and more uniform rubber colors. One of the newest products, Oximony, is claimed by the maker to be a superior grade of red oxide of iron, especially prepared for the rubber trade.

News of the American Rubber Trade.

PNEUMATIC AND SOLID TIRES ADVANCE.

THE leading tire manufacturers issued new price lists last month, in which prices were advanced materially. This was to be expected, and the advances are justified because of the increased cost of production. While crude rubber has not enhanced greatly in value, the two other main items of expense, namely, labor and cotton fabrics, have advanced to such an extent that the increase will no more than cover the added cost. Nearly every fabric mill has been obliged to increase the wages of its employes. Raw cotton has advanced heavily in price. Wages have been raised in the tire factories, and the revision of tire prices naturally follows.

Most companies have raised the prices of automobile tires 10 per cent. The companies making this advance are the Ajax, Diamond, Federal, Firestone, Fisk, Goodrich, Goodyear*, Keystone, Mason, Portage, Racine, Republic, Tyer and United States.

Truck tires of the following makes have advanced 15 per cent: Diamond, Firestone, Goodyear, and Republic. Fisk solid tires have advanced 15 to 20 per cent. Hood solid tires were advanced about 12 per cent August 15. Inner tubes of the following makes have been advanced 10 per cent: Diamond, Goodrich, and Mason. Racine inner tubes are advanced 5 per cent.

The Federal Rubber Co. has increased its prices on bicycle tires approximately 20 per cent. These are the changes up to the present time. That others may follow the first of October is probable.

*Except all Weather Tread cord tires, on which the advance is 5 per cent.

RUBBER COMPANY DIVIDENDS.

The Beacon Falls Rubber Shoe Co. paid a quarterly dividend of \$1.75 per share on preferred stock September 1 to stockholders of record August 25.

The Boston Woven Hose & Rubber Co. paid a quarterly dividend of \$3.00 per share of common stock September 15 to stockholders of record September 5.

The Kelly-Springfield Tire Co. has declared a quarterly dividend of \$1.50 per share on 6 per cent preferred stock, payable October 1 to stockholders of record September 17.

The Keystone Tire & Rubber Co. in declaring the regular quarterly dividend of 2 per cent on preferred stock added to it an extra 1/3 per cent. A quarterly dividend of 3 per cent on common stock was declared at the same time, both payable October 1 to stockholders of record September 21.

The Massillon Rubber Co. declared its regular quarterly dividend of 2 per cent on July 16 to stockholders of record July 1. The authorized capital stock of this company was increased recently from \$25,000 to \$60,000.

The Plymouth Rubber Co. paid a quarterly dividend of 1 1/4 per cent on September 1 to stockholders of record August 25.

HARKNESS GOLD TROPHY RACE.

A wonderful proof of the advantage of cord tires was shown at the Speedway race at Sheepshead Bay, New York, on September 22, when the winners of the first eight places drove automobiles equipped with Goodyear cord tires. The race was an exciting one, 21 racers contending, Louis Chevrolet, the winner, covering 100 miles in 54 minutes and 20.98 seconds, or at an average speed of 110.4 miles per hour.

LIKE ALL THE NEUTRAL COUNTRIES OF EUROPE, SWEDEN IS feeling keenly the economic pinch of the world war. Stocks of imported raw materials, and of many manufactured goods, are nearing exhaustion with no prospect of early replenishment. Automobile tires are said to bring \$500 apiece.

WESTINGHOUSE PROSPERITY.

The announcement that the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania, will on October 1 pay out of cash in its treasury the \$2,720,000 of 5 per cent collateral notes falling due on that date, is an indication of the prosperity of one of the largest American business enterprises. It is also stated that the fiscal year which opened April 1 already promises to create new records in production and profits, the latter meaning an advance over the \$18,079,889 total for last year. For the first third of the present fiscal year profits have been more than \$1,000,000 above those for the same period last year. Private industrial business, exclusive of all war work, showed on August 1 an unfilled volume of more than \$51,000,000, as against the total sales billed during the entire year ending March 31 of \$50,269,240. The new \$9,000,000 plant, begun in April and expected to be in operation January 1, already has waiting orders requiring its full capacity.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of shares of rubber manufacturing companies on September 25 are furnished by John Burnham & Co., 115 Broadway, New York City, and 41 South La Salle street, Chicago, Illinois.

	Bid.	Asked.
Ajax Rubber Co. (new).....	58	62
Firestone Tire & Rubber Co., common.....	114 1/4	116 1/4
Firestone Tire & Rubber Co., preferred.....	102	104
The B. F. Goodrich Co., common.....	46	47 1/4
The B. F. Goodrich Co., preferred.....	100	102 1/4
Goodyear Tire & Rubber Co., common.....	188	190
Goodyear Tire & Rubber Co., preferred.....	102 1/4	104 1/4
Kelly-Springfield Tire Co., common.....	43	45
Kelly-Springfield Tire Co., preferred.....	85	95
Miller Rubber Co., common.....	175	180
Miller Rubber Co., preferred.....	100	103
Portage Rubber Co.....	120	130
Rubber Goods Manufacturing Co., preferred.....	103	105
Swinehart Tire & Rubber Co.....	..	50
United States Rubber Co., common.....	60 1/4	60 3/4
United States Rubber Co., preferred.....	103 1/4	103 3/4

HOW THE FOUNTAIN PEN WAS PERFECTED.

The old saying that there is no great loss without some small gain was reversed as applied to L. E. Waterman, the inventor of the fountain pen. How he came to perfect his device is an interesting anecdote.

The inventor was at one time an insurance agent, and he carried one of those early fountain pens as a "business help." One day in 1883, when Waterman was soliciting insurance, a prominent contractor agreed to sign up with him for a large policy. The appointment was made. Waterman expected to secure a large commission on his successful salesmanship. The time came and the contractor happened to be up town at the site of a large building operation. The insurance man went there, and found his man. He pulled out his policy and handed him the fountain pen.

The pen leaked and the ink ran over the lower half of the policy. The policy would have to be re-written—but it was not—because a rival insurance man, before this was done, signed up the contractor. Waterman thus came to realize the need of a real fountain pen in the business world and he made one for himself. Then he made a few by hand for his friends. Next he opened a little shop, back of a cigar store on Fulton street, New York City, where he made 200 pens in a year, all by hand. Last year more than 2,000,000 were sold.

TRADE NOTES.

The Cutler-Hammer Manufacturing Co., manufacturers of magnetic clutches, has practically finished the first unit of its plan of reconstructing its immense plant, and contracts will soon be awarded for the second unit. Each of these new buildings is to be of reinforced concrete, brick and steel, seven stories 50 by 20 feet, and will cost about \$250,000.

The Rubber Products Co., Barberton, Ohio, has increased its capital stock from \$500,000 to \$1,000,000.

The Buffalo Foundry & Machine Co., Buffalo, New York, will increase its capital stock from \$500,000 to \$1,500,000.

The annual conference of branch managers and sales directors of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, was held at the new Wayfarers' Club, situated conveniently near the factory. This club house is beautifully furnished and equipped. It contains all the appurtenances of an up-to-date metropolitan club house.

The Brake Lining Department of the Thermoid Rubber Co., Trenton, New Jersey, has added to its hydraulic press equipment, which has enabled it to increase its output to about 37,000 feet per day. It is reported that the output last year was over 9,000,000 feet, but that this year a total product of this standard brake lining will reach or exceed 12,000,000 feet.

The Goodyear Rubber Co., San Francisco, California, expects next spring to move into new quarters in that city. A four-story brick structure, complete in every detail, to be situated on the south side of Mission street, at the corner of Shaw alley and extending through to Minna street, will probably be ready in March, 1918. The present location at 587-591 Market street has been occupied by the company for over forty years, another building having been erected on the original site after the fire of 1906.

The Massillon Rubber Co., Massillon, Ohio, has recently completed a new two-story brick building, 50 by 50 feet, which will be used exclusively for office and shipping purposes.

The Dural Rubber Corp., Flemington, New Jersey, is specializing on rubber parts for aircraft. E. H. Wilson, the president, and E. C. Ehrenfeld, the vice-president, have been in close touch with the aeroplane industry for the past two years, and they believe that rubber parts now used can be improved and standardized, and other articles of rubber added, which will be readily adopted by all makers of aircraft.

The Stearns Rubber Co., Exeter, New Hampshire, maker of mechanical goods and rubber specialties, is in the hands of an assignee.

The Hooley Hill Rubber & Chemical Co., Manchester, England, makers of accelerene, has appointed Ernest Jacoby, 79 Milk street, Boston, Massachusetts, their exclusive selling agent for the United States and Canada.

The sales force of the New York City branch of the Thermoid Rubber Co., Trenton, New Jersey, held a dinner at the Hotel Woodward, New York City, September 20, at which J. N. Kirk, Jr., New York manager, presided. The menu was printed in the form of a bill of sale, such as is used at the branch salesrooms, and combined the trade-marks of the company with the dishes provided. Mr. Kirk spoke on general sales and conditions, E. B. Knowles, assistant sales manager, addressing the assemblage on the subject of mechanical rubber goods, and H. R. Portugal on brakes and brake linings.

At a recent meeting of the stockholders of the Orrville Rubber Co., Orrville, Ohio, the following officers were elected: C. A. Wyre, president; Morgan Howells, vice-president and general manager, and C. C. Cornell, secretary.

The International Fiber Co., organized in Trenton to manufacture fiber soles and rubber goods, is capitalized at \$200,000. The office of the company will be in Broad Street Bank Building.

The National Rubber Heel Co. of Elyria, Ohio, has recently incorporated for \$50,000. Officers elected are: John Pekras, president; L. B. Fay, vice-president and manager, and R. H. Rice, secretary. The \$50,000 stock, offered at \$50 a share, is said to have been sold to forty-four stockholders in less than two hours. The company will exploit the patent heel, invented by Mr. Pekras.

The plant of the Lycoming Rubber Co., Williamsport, Pennsylvania, will be enlarged by the addition of a five-story building, 110 by 51 feet, and another similar structure is planned, 170 by 75 feet. This company is a subsidiary of The United States Rubber Co., New York City.

The Atlanta, Georgia, branch of the H. W. Johns-Manville Co. of New York City is moving from 31 South Broad Street to 138-140 Marietta street. Cannon Forbes is local manager.

REX-HIDE APPOINTMENTS.

The Rex-Hide Rubber Manufacturing Co., East Brady, Pennsylvania, has nearly completed its factory for the manufacture of fiber soles for the shoe trade. The product differs in some respects from most fiber soles now on the market. Arthur B. Kempel, the general manager, comes from the research department of The B. F. Goodrich Co., Akron, Ohio, and Merrill N.



M. N. DAVIS.

A. B. KEMPEL.

C. A. RUSS.

Davis, sales manager, formerly with the same company, was probably the first man to sell a fiber sole. Charles A. Russ, the secretary, was formerly in the sales department of the United States Rubber Co., New York City, and Sterling G. Sechrist was on the engineering staff of the Firestone Tire & Rubber Co., Akron, Ohio.

PERSONAL MENTION.

M. L. Heminway, formerly Sales Manager of the Davidson Rubber Company of Boston, Massachusetts, is now with the American Druggist Syndicate, Long Island City, New York.

V. G. Thomas, well known in the rubber chemical trade, is now general manager of the New York office of the L. H. Butcher Co., 100 William street, New York City, an old established San Francisco firm, dealer in rubber chemicals and compounding materials.

F. S. Clarke, general manager of The Waterhouse Co., Singapore, is in the United States on a business trip.

Robert B. Baird, vice-president and secretary of The Rubber Trading Co., 9-15 Murray street, New York City, has returned from East Quogue, L. I., after a month's sojourn at the seashore.

FOLDING TOP RUBBER BOOTS.

For army officers, there is a new sort of rubber boot, with a foot like that of an ordinary rubber boot, and a leg of rubber sheeting, so soft and pliable that it may be folded into a small space, when the boots are packed in the officer's trunk. When the boot is put on, the top may be pulled up around the knee, and fastened.

NEW INCORPORATIONS.

Angolo Tire & Rubber Co., Inc., The, August 6 (Buffalo), \$1,000,000. F. M. Wood, M. Levy and S. C. Kelly—all of Buffalo, New York. Principal office, Mutual Life Bldg., Buffalo, New York. To manufacture automobile tires and rubber goods.

Apex Tire & Rubber Co., September 28 (Delaware), \$1,000,000. L. Helms, W. J. Pollock, J. A. McCarthy—all foot of Broadway, Brooklyn, New York. Principal office within the State of Delaware is with the Corporation Trust Co. of America, 7 West Tenth street, Wilmington, Delaware. To manufacture rubber tires and inner tubes for automobiles and motor vehicles.

Carlisle Tire & Rubber Co., September 12 (Delaware), \$200,000. M. Satterfield, L. B. Phillips and J. B. Bailey—all of Dover, Delaware. Principal office within the State of Delaware is with the United States Corporation Co., 311 South State street. To manufacture and deal in goods and articles of which rubber is a component part.

Clarksburg Tire Co., July 12 (West Virginia), \$25,000. W. H. Garrett, I. D. Starkey, Freda Starkey, Agnes Garrett—all of Clarksburg, West Virginia. Principal office, Clarksburg, West Virginia. To deal generally in automobiles and other vehicles and all kinds of supplies for same.

Deutsch, Adolph, & Co., Inc., August 11 (New York), \$5,000. A. Deutsch, 976 Fox street, Bronx, N. Marks, 1566 Union street, and A. B. Reed, 1957 Eighty-second street—both of Brooklyn—all of New York. Principal office, New York City. To manufacture rubber goods.

Eastern Tire & Equipment Corp., August 28 (New Jersey), \$2,000. J. T. Slingsby, 67 Sylvan street, E. R. Balzer and R. H. Balzer—both of 131 Mountain Way—all of Rutherford, New Jersey. Principal office within the State of New Jersey is 22-26 Union avenue, Rutherford. To buy, sell and otherwise deal in tires, tubes, bicycle tires, motorcycle tires, accessories, and equipments of every description.

Kenyon Uniform Co., Inc., The, July 9 (New York), \$100,000. A. Foshay, 120 Broadway, A. Skillman, 1986 Bathgate avenue—both of New York City, and E. E. Hurley, 562 Atlantic avenue, Brooklyn, New York. Principal office, Brooklyn, New York. To make apparel.

Loventhal's, D., Sons., Inc., July 17 (New York), \$25,000. C. D. Loventhal, H. Loventhal and Ida Loventhal—all of 2032 Second avenue, New York City. Principal office, New York City. To manufacture rubber footwear.

Mason Tire & Rubber Co. of New York, Inc., August 8 (New York), \$5,000. L. O. Miller, P. J. Derr—both of 28 West Sixty-third street, New York City, and G. H. Burrows, 756 Franklin avenue, Cleveland, Ohio. Principal office, New York City. To manufacture automobile tires and rubber goods.

Nagle Tire Co., August 23 (Pennsylvania), \$10,000. W. C. Arnold, H. Wolfenden and E. J. Riera, Jr. Principal office, Philadelphia, Pennsylvania. To manufacture and sell automobiles, tires, shoes, accessories, etc.

New Process Rubber Co., September 14 (New Jersey), \$100,000. T. Schelberger, J. Berger—both of Town of Union, R. Brueckner, H. Bunkin—both of West New York—all of New Jersey. The principal office, 584-586 Bergenline avenue, West New York. To manufacture spliceless rubber inner tubes for automobile tires, and rubber goods of every kind and description.

Pai As U Run Tire Co., Inc., July 30 (New York), \$5,000. A. Peltersen, 540 West 157 street; L. Gold, 470 Convent avenue, and H. E. Reid, 165 Audubon avenue—all of New York City. Principal office, New York City. To deal in tires and all kinds of vehicle wheels.

Palmer Rubber Co., Inc., August 9 (New York), \$10,000. F. D. Palmer, E. K. Dusenburg—both of Poughkeepsie, New York, and J. F. MacDonald, Bridgeport, Connecticut. Principal office, Poughkeepsie, New York. To manufacture rubber molded goods.

Pan American Exploitation Co., Inc., The, July 23 (New

York), \$250,000. F. Garcia, J. O. Perez and A. Lamont—all of 68 William street, New York City. Principal office, New York City. To deal in chicle and tropical products.

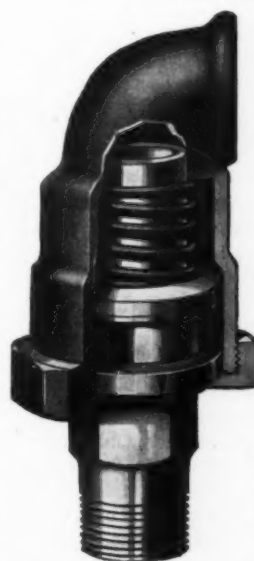
Security Tire & Rubber Co., The, July 25 (New York), \$100,000. F. D. Burchill, Jordan, J. A. Gloger, 636 West Onondaga street, Syracuse—both of New York, and G. J. Quay, Cleveland, Ohio. Principal office, Syracuse, New York. To manufacture automobile tires, tubes and accessories.

Standard Rubber Co., August 28 (Maine), \$500,000. The officers are A. B. Farnham, Treasurer, and P. B. Drew—both of Portland, Maine. Principal office, Portland, Maine. To manufacture and deal in rubber tires and tubes of all kinds and all rubber products generally.

Van Meel-Nordheim Co., August 10 (New York), \$100,000. R. Von Nordheim, Batavia, Java; J. H. Duys, 170 Water street, and F. F. Eisemann, 41 Park Row—both of New York City. Principal office, New York City. To import and export tobacco, rubber, cocoa, etc.

World Tire Corp., The, September 7 (New York), \$3,000. S. Bernheim, 35 Nassau street, New York City; C. A. Weldon, 581 Seventh street; H. H. Jacobson, 373 Grand street—both of Brooklyn, New York. Principal office, New York City. To manufacture tires.

THE TUXEDA SWING JOINT.



A swing joint, of exceptional wearing qualities, that depends upon a fibrous packing is here shown. The packing is kept under constant pressure by a spring which automatically compensates for wear and keeps a tight joint until the packing is completely worn out. Another feature of the fibrous packing is that, under conditions of extreme temperature change, the packing will readily adjust itself to the gland chamber, despite the difference of expansion of various parts. Thus, for alternate steam and cold water service this connection continuously holds a tight joint.

As only the proper pressure to hold a tight joint is exerted upon the packing, the life of the packing is greatly increased. Joints have operated over a year without attention.

Repacking can be accomplished in a few minutes without disturbing connecting piping. [Franklin Williams, Inc., 39 Cortlandt street, New York City.]

LIQUID RUBBER.

A new compounding material, known as Liquid Rubber, has recently been brought to the attention of rubber manufacturers as a desirable ingredient for mechanical rubber goods, friction and cement stocks. It is said to be a synthetic composition of that class of terpene substances which belong to the caoutchouc family and react with sulphur in the same way that rubber does. In appearance, it is a lustrous, viscous liquid and extremely sticky.

The makers claim that it will soften the compounded rubber stock and prevent the efflorescing of sulphur from the green batch for a convenient length of time; moreover, the aging qualities of a stock are increased and old and dried-up stocks, both vulcanized and unvulcanized, are made suitable for using over again. It is said that one to three per cent of the material will accomplish the necessary results.

PERSONAL MENTION.

F. A. Seiberling, president of the Goodyear Tire & Rubber Co., Akron, Ohio, has returned from a vacation trip to Alaska.

A. W. BeSaw, of the Firestone Tire & Rubber Co., has been promoted from the position of assistant general sales manager to that of western sales manager. He has recently returned from an extended trip, visiting the Coast and far western branches of the company.

P. G. Smith, who recently resigned as field manager of the export department of the Goodyear Tire & Rubber Co., Akron, Ohio, has been appointed assistant sales manager of the Globe Rubber Tire Manufacturing Co., Trenton, New Jersey, with headquarters at 1851 Broadway, New York City.

R. C. Nelson, assistant salesmanager of the McGraw Tire & Rubber Co., East Palestine, Ohio, has been appointed manager of sales of that company.

R. S. Ashby has been appointed manager of the tire department of the Chicago branch of the Empire Tire & Rubber Co., Trenton, New Jersey. Mr. Ashby has had a large experience in handling rubber goods, as at one time he held a responsible position with the Chicago branch of The Republic Rubber Co., Youngstown, Ohio, and was later in charge of the tire branch in Chicago of the Brunswick-Balke-Collender Co.

A. C. Woodbury, recorder of standards with the Society of Automotive Engineers, has resigned. He is not yet ready to announce his plans for the future.

David Jeidell, for several years with the Hearst organization as an independent advertising agent, is now advertising manager of the Delion Tire & Rubber Co., Trenton, New Jersey, with headquarters at the New York City office of that company.

L. I. Ris, formerly eastern district manager for the Knight Tire & Rubber Co., Canton, Ohio, has recently been elected secretary and sales manager of The Star Tire Co., 2158 Broadway, New York City. This company is engaged exclusively in the manufacture of automobile tires and inner tubes, making a specialty of high-grade molded casings. The company's present rate of production is 200 tires per day.

Jesse E. LaDow, treasurer of the Mansfield Tire & Rubber Co., Mansfield, Ohio, has paid the penalty of being a traveler and an interesting speaker, having been called upon recently to make several addresses covering his trip to the Far East.

G. L. Newton, for five years city salesman at Spokane, Washington, for the Republic Rubber Co., Youngstown, Ohio, has resigned to take the agency for Ford automobiles for Douglas County, Washington.

Lake B. Jones, supervisor of city sales at the St. Louis branch of the Goodyear Tire & Rubber Co., Akron, Ohio, has been transferred to the latter city to take charge of a sales school recently instituted by that company.

J. A. Dieber has been appointed buyer and manager of the sporting goods and automobile accessories department of G. Sommers & Co., St. Paul, Minnesota, succeeding L. T. Ware.

C. C. Carlton has been appointed general sales manager of the Prudden Wheel Co., Lansing, Michigan. He was formerly manager of the rim department of the Firestone Tire & Rubber Co.

Charles A. Gilbert, formerly western district sales manager for the United States Tire Co., has been appointed general sales manager of the Carlisle Cord Tire Co., New York City.

E. D. Gibbs, for many years advertising director of the National Cash Register Co., Dayton, Ohio, is now general sales manager of the Endurance Tire & Rubber Co., New Brunswick, New Jersey.

Lee O. Miller has been appointed manager of the New York branch of the Mason Tire & Rubber Co., of Kent, Ohio. The New York branch is located at 28 West Sixty-third street. Mr. Miller was formerly in the druggist sundry line in Chicago, operating upon a brokerage basis, and later became connected with the Lee Tire & Rubber Co. and the Kelly-Field Co.

J. N. KIRK, JR.

TO John Nelson Kirk, Jr., must be credited a good share of the success of the Thermoid Rubber Co.'s New York branch, of which he is manager. Mr. Kirk is a genuine New Yorker. He was born in that city in July, 1887, and has resided there his whole life. He graduated from a preparatory school in 1906, and his entrance into business was swinging a sledge hammer in an iron foundry. From there he went into Wall street, to remain but a short time, however, for on January 1, 1907, he took a position with the Trenton Rubber Manufacturing Co., which was the name of the concern now known as the Thermoid Rubber Co.



Underwood & Underwood Studios

J. N. KIRK, JR.

He took charge of the automobile tires sales in New York City, and his duties have enlarged, till he is now manager of the New York branch, which covers New York State, Connecticut and Northern New Jersey, for all the products of the company.

Mr. Kirk has always been interested in athletics. When he was at school, he was captain of the 'varsity football team. He is an active member of the New York Athletic Club, and is an amateur boxer of no mean ability. Mr. Kirk is a Freemason and a member of the Salesmen's Club of New York City.

GOODYEAR PROMOTIONS.

The Goodyear Tire & Rubber Co., Akron, Ohio, announces the appointment of managers in several of its branches, as follows:

Wade V. Aydelotte, formerly staff man for the motor truck tire department, has been made manager of the branch at Newark, New Jersey.

A. W. Ellis has been transferred from Louisville, Kentucky, to Long Island City, New York, as assistant branch manager.

H. F. McClure, formerly general line salesman at Louisville, succeeds Mr. Ellis as branch manager there.

H. T. Roseland, formerly manager of the Phoenix, Arizona, branch, has been appointed manager of the branch at El Paso, Texas, succeeding T. J. Fitzgerald, who has been called into the federal service.

D. W. Sanford, general line salesman at Phoenix, becomes acting branch manager there.

LEE TIRE & RUBBER CO.

At a recent business session of the Lee Tire & Rubber Co., held at the factory at Conshohocken, Pennsylvania, it was announced that the executive and accounting offices would be transferred to New York City, the address there after October 1st to be 245 West 55th street. The development of the new cord tire made by this company has progressed so far that it is expected to be on the market by January 1st. The meeting was under the chairmanship of Harry E. Field, general sales manager. John Kearns, general manager, announced that through additions and rearrangement of the plant the productive capacity would be increased 40 per cent the coming season.

TRADE NOTES.

Following his recent victory in the Perlman rim case, Louis T. De Munger has now filed a suit for \$1,500,000 damages against the Firestone Tire & Rubber Co., Akron, Ohio, this sum being the amount of royalties which he claims to have been deprived of through the marketing of the Firestone rim. As in the former case, Munger's tapered rim fitting into a tapered felly is cited as the original wedge construction which he holds has been infringed.

The new plant of the Western Tire Manufacturing Co., Texico, New Mexico, will be ready for operation October 1. It will have 26,600 square feet of operating floor space and a capacity of about 300 tires and inner tubes per day. Work on the building has been under the direction of C. L. Vanness of the General Engineering Co., Akron, Ohio. The Western Tire Manufacturing Co. is a joint stock company, promoted by C. A. Roberson of Texico, New Mexico, with \$1,000,000 authorized capital stock, about three-fourths of which is owned by over 1,000 stockholders living in New Mexico, Texas, Oklahoma and Colorado. The officers are: J. D. Hamlin, president; C. A. Roberson, vice-president and manager; B. S. Triplett, treasurer, and M. M. Craig, secretary. The company expects within the next 18 months to develop a plant with a capacity of 1,000 tires per day.

The tire builders of the Pennsylvania Rubber Co., Jeannette, Pennsylvania, held their fourth annual banquet at the Manan Hotel in that city, September 1. Congressman E. E. Robbins, of Greensburgh, Pennsylvania, was the principal speaker. Short addresses were made by a number of the guests and rubber workers.

The Royal Tire & Rubber Co. will soon occupy new quarters at 686 North Broad street, Philadelphia, Pennsylvania.

The Mid-Continent Tire Manufacturing Co., Wichita, Kansas, has completed its factory and is expected to start manufacturing tires within a short time, and the output to be gradually enlarged as the workers become more familiar with the various processes.

It is reported that the Empire Tire & Rubber Co., Trenton, New Jersey, contemplates doubling the capacity of its plant.

The Dayton Rubber Manufacturing Co., Dayton, Ohio, makers of tires and inner tubes, is having plans prepared for a new factory to be erected in that city.

The Carlisle Tire & Rubber Co., Carlisle, Pennsylvania, has acquired a plant of the Letort Carpet Mills in that city, and will proceed to equip this plant for manufacturing inner tubes and later, tires. It is expected that the plant will start about the first of the year with a force of 60 to 75 men and eventually this number will be largely increased. Charles S. Moomy, the president and general manager, was formerly vice-president of the Keystone Rubber Manufacturing Co., Erie, Pennsylvania.

The C. A. Shaler Co., Waupun, Wisconsin, maker of repair vulcanizers, is building a three-story addition to its plant—the second enlargement this year. The new addition will be used as a warehouse and shipping department, and will temporarily relieve the congestion in the factory, though it is expected that by next spring another building will be found necessary.

At a headquarters meeting held August 30, The Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio, voted to increase its capital stock by an issue of 5,000 shares of 7 per cent cumulative preferred stock, thus increasing the capital to \$1,500,000.

At a meeting of the stockholders of the Colorado Tire & Leather Co., Denver, Colorado, on August 30, it was voted to change the corporate name to The International Rubber Co., this being considered more pertinent, as the business is now almost entirely rubber tires and automobile accessories. This change will in no way affect the financial status of the company, the change being merely in the corporation name.

Ground has been broken for the erection of a new one-story heater building at the plant of the Fisk Rubber Co., Chicopee, Massachusetts.

The Keystone Tire and Rubber Co., New York City, has declared a regular quarterly dividend of 3 per cent on common stock and 2 per cent on preferred stock, with an extra one-third of 1 per cent on preferred, payable October 1.

The Sebring Tire & Rubber Co. has increased its capital stock from \$200,000 to \$500,000, and is building an addition 80 by 80 feet to its factory. The output will be increased to 250 tires per day.

New buildings are in contemplation by the Dreadnought Tire & Rubber Co., Baltimore, Maryland, where it is claimed the company has recently greatly increased its production of tires and tubes.

The recent sale of the Toledo-Findlay Tire & Rubber Co. to the Giant Tire & Rubber Co. of Akron, Ohio, has been confirmed by the court. The amount involved was \$26,500 and the re-organized company is now employing 75 men.

The Racine Auto Tire Company, Racine, Wisconsin, has acquired the plant formerly occupied by the Fish Brothers Wagon Company and will remodel it into a tire and rubber goods manufacturing factory, which will afford a floor area of 250,000 square feet and give employment to from 500 to 600 operatives. The price is said to have been \$200,000.

A new enterprise of Omaha, Nebraska, is the Nebraska Tire & Rubber Co., which was recently organized for the purpose of manufacturing automobile tires. To this end the company has acquired a three-story factory and three acres of ground. Edward G. Wolfe, who organized The Hawkeye Tire Co. of Des Moines, Iowa, and who has been associated with other similar enterprises, will have general charge of the plant.

The Richmond, Virginia, branch of the Firestone Tire & Rubber Co., operated by Allen & Kepler, has closed temporarily, Mr. Allen having gone to the Ft. Myer training camp and Mr. Kepler to the factory to assist in government work.

At the annual sales dinner recently given by the Globe Rubber Tire Manufacturing Co. of Trenton, New Jersey, announcement was made of the purchase of a large tract of land, adjoining the Trenton factory, to be used for building a much-needed extension.

The tire production of the Brunswick-Balke-Collender Co. of Muskegon, Michigan, has been appreciably increased. In addition to tires, the company manufactures a large number of rubber specialties, and employs in this factory about 1,500 men.

The Standard Four Tire Co. of Keokuk, Iowa, is to increase its capacity in the early future, in deference to the strain put upon the plant by present output. The company is capitalized at \$650,000, all paid in, and is said to be putting out a most excellent product.

The Kelly-Springfield Tire Co., New York City, is now installed in its new quarters at Seventh avenue and Fifty-seventh street. The first floor is used as a store and salesroom, and the two floors above as general offices.

A new building will be erected at Grand Rapids, Michigan, to be occupied by the Michigan Tire Co. It will have a frontage of 80 feet, and cost \$30,000.

The Minneapolis Tire Dealers' Association has been formed in that Minnesota city, with Fred Weil, of the Guaranty Vulcanizing Co., as president; L. W. Tanfield, of the same concern, as vice-president, and H. Lundberg, of the J. N. Johnson Co., treasurer.

The Southern Service Tire Co., just opened for business at 2002 Commerce street, Dallas, Texas, is a branch of the Keystone Tire & Rubber Co., New York City.

The Long-Wear Rubber Co., Elyria, Ohio, whose factory has just been completed at a cost of \$60,000, has started manufacturing tires.

The Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio, has added \$500,000 to its capitalization, making the total capital stock \$1,500,000.

The Gillette Rubber Co. of Eau Claire, Wisconsin, through its vice-president and secretary, R. B. Gillette, recently filed an amendment to its articles of incorporation, increasing the capital stock from \$1,000,000 to \$2,500,000. This company is now producing 250 casings and 400 tubes per day and expects to increase the total to 100 tubes and casings daily by December 1st.

The Ehman Tire & Rubber Co., Chicago, Illinois, whose recent enlargements were pictured and described in THE INDIA RUBBER WORLD, May, 1917, is already finding it necessary to add another building. With this added capacity the company expects to be turning out 3,000 tires and an equal number of tubes daily, by March 1st, 1918.

The Perlman Rim Corp., which has concentrated its business to Jackson, Michigan, has changed its name to the Jackson Rim Co., which was the name of the concern whose factory was acquired by the Perlman Corp. at the time of its organization.

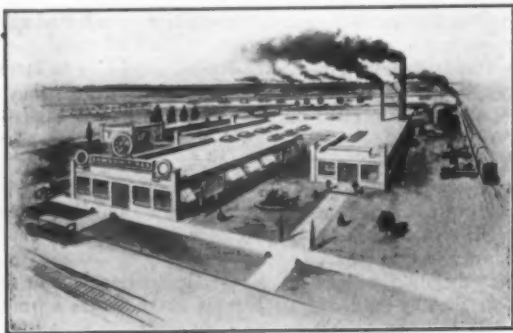
The Globe Rubber Tire Manufacturing Co., Trenton, New Jersey, has purchased a large tract of land adjoining its factory, to be used for building an extension, necessitated by the increase of the company's business.

TIRE CHANGING IN QUICK TIME.

That motorists of Honolulu, Hawaii, might become more familiar with the ins and outs of tire changing, a big tire changing meet was recently arranged in that city and staged at one of the city's theaters. Fifteen two-men teams competed for championship honors in this novel contest. The contest covered deflation of the tire, removal of casing from the rim and tube from the casing, replacement of tube and casing, and inflation of the tire to fifty pounds pressure. The time of the winning team in the contest was one minute, forty-seven seconds.

THE SAMSON TIRE & RUBBER CO.'S PLANT.

The Samson Tire & Rubber Co., Adolph Schleicher, president, 318-21 Van Nuys Building, Los Angeles, California, is one of the newest companies to commence the manufacture of tires on



THE SAMSON TIRE & RUBBER CO.

the coast. The accompanying illustration of the plant is an indication that this new enterprise has entered the western tire field with all the facilities for turning out a first class product.

The building is a modern fire proof brick and cement structure with 26,336 feet of floor space. The plant is fully equipped with modern machinery and is said to be one of the best tire building plants in the West. The plant is already in operation, though in a small way; but the company expects to steadily increase its output during the next few months.

KELLY-SPRINGFIELD TIRES IN CLEVELAND.

The Cleveland branch of the Kelly-Springfield Tire Co., New York City, will move into a new building situated at the corner of Prospect boulevard and East Forty-sixth street, about January 1, 1918. The structure is to comprise three stories and



KELLY-SPRINGFIELD TIRE CO. BRANCH IN CLEVELAND.

basement, and will be of steel and concrete construction, with white terra cotta finish, the main building being 86 by 153 feet in size. The company will occupy the entire second and third floors as well as the corner store. A branch and service station for pneumatic and solid tires is to occupy the one-story addition. Three stores are available for renting.

RACINE AUTO TIRE CO. BUYS PLANT.

The Racine Auto Tire Co., Racine, Wisconsin, because of the needs of expanding business, has purchased the plant of the "west works" of the J. I. Case T. M. Co., in that city. This plant comprises a group of buildings of heavy mill construction, having a floor space of 250,000 square feet, with a modern electrical power plant, a fine office building, and between two and three acres of unoccupied land. Plans had been made to erect a new factory on land purchased for the purpose, but present building conditions and the delay which would be incurred before starting, induced the company to buy this finished plant. This will enable the concern to begin operations by January next, as the machinery intended for the new structure was already ordered and will be delivered in December.

ENDURANCE SALESMEN IN CONVENTION.

Early in September a convention of the salesmen of the Endurance Tire & Rubber Co., New Brunswick, New Jersey, was held at the Hotel Klein, that city. Representatives of the firm from all parts of the country, officers of the company and factory heads were in attendance. The speakers included Judge Peter F. Daly; W. G. H. Randolph, president; C. E. Eckrode, vice-president and general superintendent; J. H. Cooper, general field man; E. B. Nobles, of the factory, and E. D. Gibbs. Interesting talks on advertising and printing were given by S. L. Thomson, of the Hawley Advertising Co., and Harold Byron Gibbs, of the Atlantic Lithographing Co., both of New York City. These addresses and the helpful free-for-all discussion which took place on the final day of the convention indicated that the company has a live wire sales force that is bound to make itself felt in the rubber trade.

THE MANUFACTURE OF SOLID RUBBER TIRES has been greatly boomed as a result of the unprecedented congestion of traffic on American railroads and the increasing use of motor trucks for longer hauls than suburban delivery. Upwards of 375 firms are now engaged in the production of commercial motor vehicles, the majority of which are of the slower moving type operating on solid tires. Henceforth, a solid tire department of tire service stations will become increasingly common.

AMERICAN WORLD TRADE AFTER THE WAR.

Already the question of American commercial competition after the war is provoking much speculation in England, where a rather widely held opinion exists to the effect that America will take the place of Germany as the chief British rival. Welcome as are the products of American business in the war, British captains of industry have been watching the economic boom in the United States, the remarkable factory expansion in every line, the growth of a merchant marine and further government plans for an overseas fleet commensurate with the position of the United States in the economic world, and have been estimating the effect of these agencies upon future British foreign trade, not without some misgivings.

It is realized in London that America now enjoys the bulk of the world's export trade, that the enormous wealth amassed during the past three years is rapidly being turned into increased production facilities, and that the time is not far distant when American goods can be carried largely in ships flying the stars and stripes. It is also understood that America has enormous resources in coal, iron and other raw materials; she has huge factory capacity, exceptionally aggressive business men and an almost unlimited man-power of efficient laborers. The question is how much export business will she yield after the war? Certainly she will not retire again to a third rate position in international trade; will she do better than a mere second?

In a recent article in "The Times Trade Supplement," London, reviewing American activities in foreign markets, increasing ship tonnage and production expansion, particularly in the textile, iron and steel trades, it is pointed out that the real problem is one of costs, and that the country which can produce and ship goods more cheaply can obtain and hold something like the lion's share. Selling prices are necessarily high in America because of high assemblage costs due to the vast distances of so large a country; because of high shipping costs, owing to unfavorable marine laws, and because of wages nearly double those of Great Britain.

This fact, it is thought, will more than offset England's handicap, due to heavy war taxation and labor shortages. While the United States is expected to take a permanently high rank in international commerce as a result of the war, the belief is expressed that European competition will still be keen, and that America will have no light task in retaining her present footing in foreign markets.

TOUGH RUBBER COMPOUND CABLES.

An article entitled "Wiring with Tough Rubber Compound Cables," by W. Ellerd-Styles, A.M.I.E.E., in "The Electrical Review," London, of April 27, 1917, for the benefit of contractors and others interested in electrical insulation work, dispels the doubts of those who have questioned the suitability of tough rubber compound cables, popularly known as C. T. S., in all situations in place of conduit, capping, and casing, Stannos, Henley or other systems of wiring.

Superiority is claimed over vulcanized rubber cable of standard manufacture. Both are insulated in exactly the same way up to the vulcanized layer. The ordinary V. R. cable is then finished with tape and braided, both very hygroscopic, both very inflammable, and the red braiding in particular being appetizing for mice and similar vermin. C. T. S., on the other hand, is finished with a protective coating of tough rubber compound, non-hygroscopic, not easily ignited and ignored by vermin. Its extensive use for trailing cables, etc., in mines indicates its low fire risk.

Six diagrams show the ready installation and economical use of twin and triple cable for residential lighting wires, the ease with which switch plugs can be wired, including single-pole, two-way switches and controls from several positions, also a method of using a three-plate ceiling rose to avoid a loop into the switch which may save several yards of cable. It is pointed out that the extra cost of cable is more than

compensated for by the saving in shorter runs and reduced labor costs, remembering that cable is heavy and it is easier to work the runs in a downward direction. Other advantages are that cables can be run in positions that would be impossible with other systems of wiring; cables may be continued into exposed situations without fear of troublesome after-effects; there is no braiding to bother with or to cause surface leakage, and no earthing trouble, a good insulation test always being insured; there is no threading of conduit or capping and casing between partition walls; the time taken to sort out the circuits at the distribution board is reduced to the minimum. For surface wiring, it is said to score over metallic systems, being more flexible and unkinkable.

A USE FOR ONE'S OLD RAINCOAT.

The day is now past when the rubbish heap represents the ultimate destination of every discarded raincoat. According to reliable information, the owner of a shabby, worn out garment of this kind may now become the triumphant possessor of eight or more "perfectly good" articles, all useful as well as orna-



mental. These acquisitions, as shown in the accompanying photograph, include: A cravenette apron with tool pockets, a handy addition to the woman motorist's outfit in case of unexpected road repairs; a small sponge bag, convenient for traveling; an "auto back" cushion; two rain-proof hats in becoming designs; a luggage case for week-end trips; a child's rainy-day cape, and, finally, a kit, large enough to contain many daily necessities, or those required for emergency use. Patterns may be secured for all the above articles. [The Ladies' Home Journal, Independence Square, Philadelphia, Pennsylvania.]

ZINC OXIDE PRICES.

The New Jersey Zinc Co., New York City, announces the following prices, effective October 1, on Florence brand French process zinc oxide, for shipment on contract for the fourth quarter of 1917:

	Carloads	Less Carloads
White Seal	15 cents	15%
Green Seal	14½	14½%
Red Seal	14	14%

The above prices are subject to change without notice, and are based upon shipment in barrels, being f. o. b. shipping point, with actual freight (not exceeding 30 cents per 100 lbs.) allowed on carload shipments.

ASBESTOS COMPANIES IN WYOMING.

For nearly thirty years there has been talk of the asbestos deposits around Casper, but no more attention has been paid to them in the past than to the oil seepages. Now, however, there is interest manifested in these beds and several companies have been organized to exploit them.

CANADIAN NOTES.

LONG service and a spirit of co-operation are being encouraged in a practical manner by the Dominion Rubber System. Long service is recognized by presentation of a handsome gold badge of oval shape indicating whether the service has covered a period of 5, 10, 15, 20 or 25 years, and a complete record of these badges will be kept in the office of the president. A spirit of co-operation is being fostered by monthly prizes of \$10, \$5 and \$1 for suggestions which are deemed worthy of adoption as to the better handling of any matter connected with the company's business.

Fully 300 former Dominion Rubber System employes are overseas, either in active service or in army training camps.

Over 1,000,000 tons of general rubber goods and footwear were shipped from the Canadian Consolidated Rubber Co.'s plant at Montreal, Canada, during the month of August, the largest month's tonnage ever handled by this unit.

The plant of the Dominion Rubber Factory at St. Jerome, Quebec, is being enlarged by the erection of a three-story brick building, 50 by 150 feet, in order to increase the production of that factory, which is mainly "Fleet Foot" footwear. The first floor of the new building will be used for offices and the balance for shipping and storage, thus allowing more room for manufacturing in the present buildings.

The United Rubber Manufacturing and Reclaiming Co., Limited, Toronto, Ontario, whose tires and tubes have been on the market for three years, but whose goods have been manufactured for them by another concern, is about to erect and fully equip a plant for making its own specialties, and expects to be in operation early in 1918.

A STRIKING TIRE EXHIBIT.

At the Canadian National Exhibition held at Toronto last month, the exhibit of Gutta Percha Rubber, Limited, of that city, was most favorably commented upon. By the aid of stage

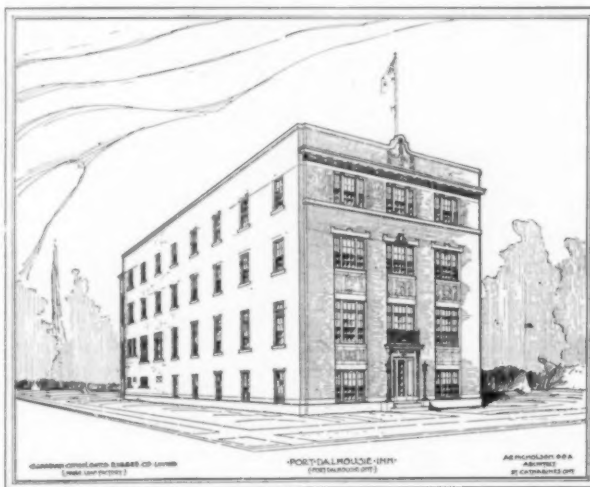


TIRE EXHIBIT AT CANADIAN NATIONAL EXHIBITION.

carpentry and the scene painters' arts there was built up a reproduction of the design made familiar throughout the Dominion by poster and window card advertising of this company's tires.

A HOME FOR DOMINION RUBBER SYSTEM GIRLS.

The increasing employment of young women in Canadian rubber factories has demanded better attention to the housing problems. The accompanying illustration shows the architect's rendered drawing of the new Port Dalhousie Inn now being



erected at Port Dalhousie, Ontario, as a home for girls employed in the Maple Leaf factory of the Dominion Rubber System. The building is surrounded by trees which add a distinct charm to the place.

EXPORTS TO SCANDINAVIA AND HOLLAND PROHIBITED.

Exports from Canada to all destinations in Norway, Sweden, Denmark, and Holland have been placed under embargo by the Canadian Government, under the authority of the War Measures Act, 1914, by a decree dated September 8.

The long list of articles specifically mentioned includes the following:

- "All chemicals, drugs, dyestuffs and tanning materials;
- "Cotton, wool, silk, flax, hemp, jute, sisal, and other fibers and manufactures thereof;
- "All earths, clay, glass, sand, and their products;
- "Machinery, tools and apparatus;
- "Medical, surgical, laboratory, and sanitary supplies and equipment;
- "All metals, minerals, mineral oils, ores, and all derivatives and manufactures thereof;
- "Rubber, gums, rosins, tars, and waxes, their products, derivatives and substitutes, and all articles containing them.

GASOLINE FROM KEROSENE BY ELECTRO-CHEMISTRY.

Gasoline from kerosene, or other distillates of crude petroleum, such as solar oil, and gas distillate by an electro-chemical process, is reported by Louis Bona Cherry, Kansas City, Missouri, member of the American Institute of Electrical Engineers, the American Electrochemical Society and other scientific associations. In a test-plant at Coffeyville, Kansas, he has secured from kerosene 78 per cent of waterlike gasoline of sufficiently high quality to do first class dry cleaning or to run an automobile. This is accomplished at a cost of less than one cent a gallon. An electric plant capable of converting 60,000 gallons of distillate per day has been built at the Sinclair refinery at Coffeyville, and as soon as further details are perfected, Mr. Cherry believes he will be able to obtain 90 per cent gasoline from kerosene.

Sale of the Boston Belting Co.

LAST month, action was taken by the stockholders of the Boston Belting Co., by which the control of that corporation passed to the firm of Willett, Sears & Co., Boston, Massachusetts. The meeting held Friday, September 14, was called by the directors, who had considered, approved and recommended the acceptance of an offer from the above named firm to purchase all the assets of the company for the net sum of \$825,000 in cash, and \$500,000 of the preferred stock of a new Massachusetts corporation entitled the Boston Belting Corporation, which shall acquire all of said assets. This new stock, 6 per cent, cumulative, is to be preferred as to assets and accrued dividends up to \$50 per share, and callable at \$52.50 per share. Each stockholder is to receive in cash \$82.50, and one of the above \$50 shares for each share held by him.

President Thomas A. Forsyth, in the call for the meeting, made the following statement:

After more than 50 years of service with your company in various positions, from office boy to general manager and president, I feel that the time has come when I should be relieved from business cares. But for the exigencies of the situation, I should have retired some years ago and now my opportunity comes in an offer for the company's property that I consider just and honorable; an offer which gives to each stockholder an absolutely equal price in money and preferred stock for his shares. This preferred stock I regard as an exceptionally safe investment, it being in my judgment fully safeguarded.

In view of the long association of the Forsyth family with the Boston Belting Co., I should be unable to approve any change that did not mean the continuance of the business with renewed vigor and determination. Being satisfied that this sale will insure the future of the company, and that the price offered is fair to all, I unhesitatingly advise the acceptance of the offer.

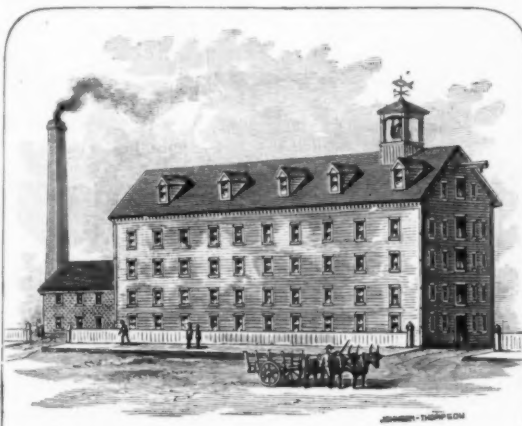
The passing to new management of this, the pioneer rubber

did some of his early experimenting. In this factory for many years was the first calender and grinder ever built, the invention of Edward M. Chaffee. Connected with the concern at various times were such well known men as Rubey, Richardson, Tappan, Cheever and McBurney. E. S. Converse was at one time president, as was also Henry Durant, the founder of Wellesley College.

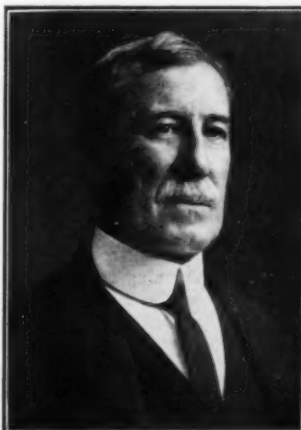
But for half a century the name of Forsyth has been identified with this concern. William Forsyth, who came to Boston from Scotland in 1828, became foreman in the factory and four of his five sons worked in the factory, each one beginning at the bottom and working up to leading positions. James Bennett Forsyth, entering at the age of 14, worked in all departments, and became successively superintendent, manufacturing agent, general manager and president. His name is identified with over 50 patents in the rubber industry. John Hamilton Forsyth learned the machinists' trade and became master mechanic of the factory. George Henry Forsyth was director and assistant-manager.

Thomas Alexander Forsyth, the sole surviving brother, started as office boy half a century ago, and now retires as president and general manager.

Willett, Sears & Co., who now assume control, have a record for greatly enlarging the output and improving the efficiency of several manufacturing concerns which have been taken over by them, through the Industrial Service and Equipment Co., one of their corporations. This company acts as adviser, auditor, chemist, buyer, architect and engineer for its companies, maintaining more extensive and complete departments for these various services than would naturally be carried by any concern singly. The outlook for the Boston Belting Corp. is for a wider, larger, more profitable career than ever before.



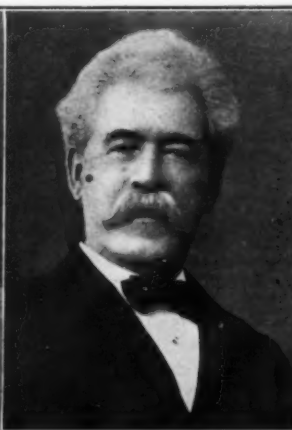
THE ORIGINAL FACTORY OF THE PRESENT BOSTON BELTING CO.



THOMAS A. FORSYTH.



GEORGE H. FORSYTH.



JOHN H. FORSYTH.



JAMES B. FORSYTH.

factory, calls for more than a brief notice. Connected with this factory, at one time or another, were most of those early experimenters who gave impress to the establishment of the manufacture of rubber on a practical basis. Here Charles Goodyear

Mr. Forsyth looks forward with pleasure to devoting his time to the Forsyth Dental Infirmary, of which he is the president, to the Forest Hill Cemetery Association, and the Boston City Hospital, of both of which institutions he is an official.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

SEVERAL of the larger rubber manufacturers are extremely busy on orders for government goods, and in some of the departments this work is taking precedence over the regular commercial orders to such an extent that deliveries on the latter are grievously behindhand. The Hood Rubber Co. is pushing its boot and gaiter department on special lines for army needs. The Apsley Rubber Co. has been busy on ponchos and sheeted goods. The Boston Rubber Co. is also actively engaged along similar lines, and the American Rubber Co. is running a large proportion of its works on articles contracted for by the government. The Converse Rubber Shoe Co., Malden, is working on a large contract which includes tennis shoes for the navy and boots and gaiters for the army. Everlastik, Inc., is running part of its looms on bandolier webbing and webbing for military accoutrements. These are but a few of the lines being furnished for army, navy and hospital use by rubber manufacturers in this vicinity.

Manufacturers are complaining of scarcity of help, with a probability of still greater trouble in this particular. Many rubber workers have enlisted, and, as many more have been drafted, it is difficult to replace men experienced in technical and mechanical processes of rubber manufacture. The experiments of replacing absentees with female operatives have been but partially successful. Women who have had experience in one branch of rubber work have positively refused to go into heavier work. Knowing that they are practically indispensable, they choose to do only the lighter work. So new men must be hired and trained and this, besides delaying the filling of orders, has other disadvantages apparent to rubber manufacturers. As an indication of the needs of rubber factories in this vicinity, it may be stated that one Sunday paper had in its want department two advertisements of the Hood Rubber Co., Watertown, which called for 171 persons for specific positions. Of these, 75 were for girls to work on rubbers or tennis shoes, 10 for men bootmakers, 25 for men in general factory work, 10 to learn tire making, and the rest for office and factory work. A prominent reclainer, in stating it was hard to get help, asserted that he had only about 60 per cent. of the number of employes he needed at his factory.

The Lee Tire & Rubber Corp., Conshohocken, Pennsylvania, will open a branch store in this city as soon as the necessary alterations can be made on the premises recently leased for that purpose at 1100 Boylston street, right in the heart of the auto accessory trade. This branch, which will be in charge of O. S. Johnson, will be made the distributing point for Lee tires for all New England. Mr. Johnson was connected with the Hartford Rubber Works as manager of its Buffalo, New York, branch, subsequently covering the same territory for the United States Rubber Co., New York City. Later he was stationed in Texas for the same company, finally serving as Southwestern manager, with headquarters in St. Louis.

Many members of the Rubber Club will remember the Aviation Dinner, held at the Algonquin Club in this city, in December, 1909. The subject of the meeting was aeronautics, and two features of the evening were motion pictures shown by Augustus Post, secretary of the Aero Club of America, accompanied by a graphic account of his adventures, and an address by Professor Robert W. Wood, of Johns Hopkins University, Baltimore, Maryland. These two alert, able specialists, prominent even then for their achievements, still maintain their "places in the sun." Since that time, Professor Wood has done some wonderful work, and a recent invention is one enabling an aviator to

photograph wide expanses of country, even through haze and fog. He has been appointed a major and is now in France, attached to the aviation corps. Augustus Post, whose aeronautic experiences in Europe nearly a decade ago were so interestingly recounted to the rubber men on the occasion above referred to, is also with the Aviation Corps on the French front, where he is doing commendable work as his "bit" for the country's cause.

A brief notice was given last month of the incorporation of the Dunbar-Daggett Co. of this city and New York City, crude rubber brokers and dealers in shellac and waxes. This concern, which succeeds to the business of the J. Frank Dunbar Co., is composed of J. Frank Dunbar, who has been prominent in crude rubber circles for many years; Harold A. Daggett, formerly with Alden's Successors, Limited, New York City, and more recently with A. B. MacNamara & Co., also of that city; and J. F. Dunbar, Jr., who has had charge of the New York office of the older concern. Messrs. Daggett and Dunbar, Jr., have their headquarters at 82 Beaver street, New York City, and Mr. Dunbar, Sr., maintains his Boston office as heretofore, at 201 Devonshire street.

The employes of the Boston Belting Co. held their first annual field day on September 15 at Riverside recreation grounds, more than 500 men, women and children attending. There was a long program of sports for old and young, including a baseball game, tennis tournament, and an exhibition of fancy diving, prizes being awarded to successful contestants. Refreshments were provided in the pavilion and dancing was enjoyed all the afternoon. This was such a success that it was decided to continue the field day as an annual feature hereafter.

The Beacon Tire Company, Inc., Beacon, Dorchester County, New York, will have a Boston branch under the name of The Beacon Tire Co. of Boston, with salesrooms at 103 Massachusetts avenue. This concern will have the entire New England agency for these tires.

At a meeting at the offices of the Fisk Rubber Co., Chicopee Falls, Massachusetts, the question was discussed regarding a plan of forming an association for the maintenance of a visiting nurse. The association will be a community organization and the expenses will be paid by the manufacturers in that city.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

THE rubber industries of this city were never more active than they are today. This activity, however, does not imply that the output is as large as it should be. Every factory is finding difficulty in filling its complement of operators. Large numbers of men have been called to the service and are now doing their duty or are waiting the call to join the army. This takes from the factories some of their best employes, not only in the mechanical department, but in the office, laboratory, and selling departments, and as a result many factories are turning out less goods than their capacities would warrant. Most manufacturers are doing their best in instructing new help. The handicap is likely to continue for some months at least.

The Miller Rubber Co. has announced that it will sell to the stockholders, at par, common stock of the company to the amount of 20 per cent of their holdings as a record of October 15th. One-half of the subscription payable on or before November 1st, and the remaining one-half on or before May 1st, 1918. President Pfeiffer states that the directors expect also to pay stock dividends of not less than 20 per cent on the present issue of

\$3,000,000 common stock. This action to be taken shortly after the annual meeting early in 1918, provided conditions at that time continue to warrant it. The company is in excellent condition and has a steadily increasing volume of sales.

The Mason Tire & Rubber Company, Kent, Ohio, will soon start the manufacture of fiber soles, to have the trade name of "Masola." The factory will start as soon as a special equipment needed can be placed. The company has opened a new branch at 2120 Michigan Boulevard, Chicago, Ill., which is one of the most attractive tire salesrooms in that state. The decorations are elaborate and a large electric sign has been placed on the roof, making a splendid advertisement for the company's tires during the evening hours.

The Portage Rubber Co. recently voted on a new issue of stock which changes its capitalization from \$2,000,000 common, which had been issued, and \$1,000,000 preferred in the treasury, to \$2,500,000 common and \$500,000 preferred, offered to the stockholders pro rata against the holders of old common and sold to them at par. Practically all of the new stock has already been subscribed for by the stockholders.

The B. F. Goodrich Rubber Co. has been making tests of the endurance of tires over all sorts of roads and has sent out what is called a Tire Testing-Fleet, which is making an extended eastern tour. Formerly the testing of these tires was done by operating over the roads in the vicinity of this city, but this was hardly a fair test, as road conditions in other sections of the country are far different from those in this vicinity and this is the reason for extending the tests to far points and long tours. Over 40 cars of different makes and types are used in testing these tires, and every day the tires are carefully inspected and records of conditions are sent to the laboratories here.

This company is doing some graphic advertising by the preparation of moving picture films showing the cultivation and preparation of rubber in the Far East, its transportation to the

factory, and the various processes of making up many lines of goods made by this corporation. The film is an interesting one and is likely to redound to the advantage of the company and still further popularize its name.

On Labor Day the Goodrich employees held a celebration on the Goodrich Athletic Field. The activity started at 10 o'clock in the morning and lasted until 6:00 P. M. In the morning the different Goodrich foreign societies staged foreign dances in national costumes and two Goodrich employees gave a wonderful exhibition of skilled fencing. A lively



A GOODRICH POLE VAULTER.

game of soccer football was played by two teams made up of Goodrich employees. In the afternoon a large number of athletic contests were held, dashes, jumps, hurdles, weight events, and other stunts being among the competitions for prizes. A picture is given of a wonderful pole vault by the winner in one of the contests.

Akron's first contingent of selected men left for the Ohio cantonment at Chillicothe, September 7. During the farewell exercises the men paraded the streets, which were lined with



IMMENSE GOODRICH FLAG CARRIED IN PROCESSION.

cheering citizens. The men carried the giant flag, claimed to be the largest American flag ever flown.

The Goodyear Tire & Rubber Co. took a unique way of announcing the amount of its sales during the month of August. The great factory whistle blew twelve long blasts and one short one, much to the astonishment of the entire population of the city. It was announced that the August sales of the company amounted to \$12,577,000, thus explaining the reason for the twelve long blasts and the one short one. This company has received congratulations on its wonderful business. It is reported that the first ten months of the year the sales amounted to \$89,000,000, and it is expected that the company will close its year with sales of well over \$100,000,000.

A four-acre pond at Seiberling Park is being put into condition to be used by the Goodyear employees for bathing and swimming sports. In order to make this pond more suitable, a suction dredge draws the muck from the flood of the pond and throws it over the land. As soon as all the muck has been removed a sandy beach three hundred feet long and one hundred feet wide will be constructed and a first class bath house erected. It is expected that this will be ready for use next spring.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

EVERY plant in this state manufacturing rubber goods of any kind or description is still working to full capacity, in many instances on day and night shifts, and practically all are far behind their orders. Never in the history of the rubber industry have there been so many persons employed as at present, and concerns are offering every inducement possible for more help but are unable to obtain it. This activity among the rubber factories is also reflected in mills producing fabrics for rubber goods, and the number of these is on the increase in this state and adjacent districts.

The Narotex Co. of Pawtucket has nearly doubled its equipment during the past month. This concern, which has been in operation for two or three years, but has only recently been incorporated under the laws of Rhode Island, is working principally on large contracts on auto tire wrappers. Clarence A. Steere is treasurer and J. P. Card Weis, general manager.

Sixty-one representatives of the solid motor tire department of the United States Tire Co. attended the sales conference in this city early last month. Visits were made to the plant of the

Revere Rubber Co., on Valley street, Providence, where the various departments were inspected and the methods explained.

The conference lasted a couple of days, the evening of the first day being given over to the annual dinner at the Crown Hotel, with C. J. Welsh, of New York, sales manager, as toastmaster. During the social hour that followed the dinner, H. W. Waite, general manager of the Revere Rubber Co.; J. Blackmar, of New York, vice-president of the Commercial Vehicle; R. R. Drake, of New York, service manager; Garfield List, of Philadelphia, district manager, and Charles Gray, of Detroit, factory representative, gave interesting and instructive talks pertaining to their special departments. These were interspersed with a cabaret entertainment. On the afternoon of the second day a clambake was provided at the grounds of the Warwick Club.

The United States Knitting Co., Foundry street, Central Falls, which is engaged in manufacturing linings for rubber goods, has been increasing its facilities during the past few weeks. It has many orders ahead and new orders are coming in every day.

Work is being rushed at the National India Rubber Co., Bristol, a large government order for hospital sandals having recently been received. The company has leased the basement of the Namquit Mill on Thames street in Bristol, which will be used for additional storage.

Wendell R. Davis, purchasing agent of the National India Rubber Co., has returned from a two weeks' vacation trip the past month at Locke Mills, Maine.

William H. Cooke, for many years in the bookkeeping department of the National India Rubber Co., Bristol, Rhode Island, retiring about six years ago, died September 1 from a paralytic stroke suffered a fortnight previously. He was in his seventy-fourth year.

Plans are being drawn for extensive additions at the plant of the National India Rubber Co., including a number of new buildings made necessary by the increasing business. It is intended to begin work at once so as to have it as well advanced as possible before the cold weather sets in.

The employees of the printing department of the National Rubber Co. held their first annual excursion the past month, making a trip to Newport and Rocky Point by the steamer Sagamore. A shore dinner and dancing were among the special features.

The branch rubber mill of the O'Bannon Corp., operating as The International Rubber Co., at West Barrington, where carriage cloth is the product, has just completed extensive improvements to its plants whereby its output has been materially increased. Several new calenders have been added, giving this plant one of the best batteries of calenders in this section. The plant is rushed with orders, necessitating its operation at night as well as day.

The Revere Rubber Co., Providence, will erect a new building and add a story to its Eagle street structure. The latter will be of concrete, brick and steel construction, 60 by 100 feet in size. The new building will be 48 by 64 feet, one story in height, of brick and concrete. This will give an additional floor space of about 12,500 feet.

John A. Clemens, assistant sales manager of the Davol Rubber Co. was one of the members of the Providence contingent that left here September 19 to join the new National Draft Army at Camp Devens, Ayer, Massachusetts, where he was assigned to the Three-Hundred-and-First Engineers.

The Davol Rubber Co., Providence, is working on large orders and employs a large number of young women in its several de-

partments. In many cases, because of the inability to secure male help to replace those called by the government to military service, women are being substituted.

The Bourn Rubber Co., Providence, is being driven on orders as never before and is finding great difficulty in securing necessary help in its various departments. Increased facilities have been added to the plant within the last few months.

The Doughty Tire Co., Providence, is working in day and night shifts. Extensive alterations and improvements, with a heavy augmentation of machinery and equipment, have recently been made by the concern and its facilities materially extended. On Sept. 22 considerable damage resulting from water and fire was occasioned at the concern's plant, where a fire started from an unknown cause. The plant of the American Raincoat Co., in the same building, was also damaged.

HOW CLEVELAND'S DENTAL PLATE SAVED THE NATION.

THE full story of a secret operation performed on President Cleveland, July 1, 1893, whereby his entire left upper jaw was removed, because of a malignant growth, and replaced with a vulcanized rubber plate, is told for the first time in "The Saturday Evening Post" of September 22, by Dr. W. W. Keen, emeritus professor of surgery at the Jefferson Medical College in Philadelphia. Dr. Keen assisted Dr. Joseph D. Bryant of New York at the operation, which was performed twenty-four years ago, on Commodore E. C. Benedict's yacht "Oneida," while steaming slowly up the East River, New York City.

The operation took place soon after the beginning of the President's second administration, but owing to the fact that he was then in the midst of his sound-money fight with Congress no detail was allowed to leak out concerning it. He feared the effect on the public that the knowledge of his affliction would have, for Vice-President Stevenson was known to be opposed to his ideas on sound-money. How successfully the operation was accomplished is attested by twenty-four years of silence.

The entire left upper jaw was removed from the first bicuspid tooth to just beyond the last molar, and nearly up to the middle line, also a small portion of the soft palate. The operation was done within the mouth, without any external incision, the retention of the floor of the orbit preventing any displacement of the eyeball. This normal appearance of the eye, the normal voice, and especially the absence of any external scar greatly aided in keeping the operation an entire secret.

On July 5, the "Oneida" took the President to his summer home, "Gray Gables," on Buzzards Bay, where he was able to walk to the house. On July 17 the same surgeons again met him on the yacht "Oneida" and removed all tissue about the wound which looked the least bit suspicious. The President attended the opening of the special session of Congress on August 7, returning to "Gray Gables" four days later for "rest from his arduous and exacting duties."

After the first operation, while Cleveland was at "Gray Gables," Dr. Kasson C. Gibson of New York fitted an artificial jaw of vulcanized rubber. With this in place Cleveland's speech was excellent, even its quality not being altered, and on October 14, in a letter to Dr. Gibson, he expressed his lively satisfaction after trying a new, better and more comfortable plate.

It is a remarkable fact that notwithstanding the nature of the operation, Cleveland continued to make public addresses, and on several occasions, notably after the celebration at Washington on September 18, 1893, of the anniversary of the laying of the cornerstone of the Capitol, persons who heard him remarked on the clearness and vigor of his delivery.

He lived until 1908, fifteen years after the operation.

STATEMENT AND BALANCE SHEET OF THE INTERCONTINENTAL RUBBER CO. FOR FISCAL YEAR 1917.

THE directors of the Intercontinental Rubber Co., 120 Broadway, New York, have submitted to their stockholders the following balance sheet and statement of the profits for the year ended July 31, 1917, which have been prepared and certified to by Messrs. Loomis, Suffern & Fernald, certified public accountants, of New York City.

BALANCE SHEET—JULY 31, 1917.

Assets.			
Investments in stock:			
Merged and subsidiary companies—			
By cash	\$2,740,321.59		
By stock issues	28,198,575.30		
Steamship stock	100,000.00	\$31,038,896.89	
Patents (exclusive of subsidiary companies)		15,141.77	
Accounts and notes receivable, etc.:			
Advances to subsidiary companies	\$484,746.58		
Sundry accounts	32,171.95	516,918.53	
Investment securities (market value)		1,411,520.04	
Cash		805,494.14	
		\$33,787,971.37	
Liabilities.			
Capital stock, common	\$29,031,000.00		
Accounts payable, taxes, accrued, etc.:			
Sundry accounts	16,941.65		
Reserve accounts	734,433.71		
Surplus (as below)	4,005,596.01		
		\$33,787,971.37	
Surplus Account.			
Surplus August 1, 1916	\$2,950,422.00		
Net profits and income from investments, interest, etc. (after adjustment of investment securities to current market value)	\$1,195,895.21		
Less:			
Administration and general expenses and taxes	\$80,598.78		
Cost of caring for Mexican properties, including Mexican taxation	54,445.30	135,044.08	
		1,060,851.13	
		\$4,011,273.13	
Charges against surplus:			
Reserve against loans to subsidiary companies		5,677.12	
Surplus, July 31, 1917		\$4,005,596.01	

OPERATIONS IN MEXICO.

Operation of your company's properties in Mexico continued to be suspended throughout the year, as the result of unfavorable local and general conditions. As will be noted from the balance sheet, the cost of safeguarding the company's interest in Mexico, including taxation, has been charged against income. Although the Torreon factory was occupied in December, 1916, by armed forces opposing the government, the resulting damage was not serious. For the first time in several years the company's ranch seems to be free from disorderly and menacing armed forces, but our efforts to assist the peaceable people living on the ranch to produce foodstuffs, which they urgently need, were rendered ineffective by the long drought of the past summer, which was general throughout North Central America. Notwithstanding increased taxation and badly crippled railway service, which has made it necessary for the company to purchase its own motive power and railroad cars, your directors have decided that an effort be made to resume operations and the necessary preliminary steps have been taken. It is believed that operations at the Torreon factory will be resumed early in October, but the outcome will depend in large measure on the assistance and just co-operation of the National, State and Municipal governments of Mexico, which we have every reason to believe will be afforded.

GUAYULE PLANTING IN ARIZONA.

The Agricultural Products Corporation, all of the capital stock of which is owned by your company, has acquired by purchase approximately 9,000 acres of undeveloped land in Pima

County, Arizona, twenty-seven miles south of the city of Tucson. During the year a considerable portion of the land has been cleared, an abundant water supply has been developed, nurseries have been provided and other preliminary work has been performed necessary to the establishment of a cultivated and irrigated guayule plantation on a commercial scale.

The chemists and botanists of your company have been studying and experimenting with cultivated guayule for the past seven years, first in Mexico and later in California, and while several factors having an important bearing on the final outcome are not fully proven at this time, your directors feel that the experimental results have been so encouraging and the potential importance is manifestly so great, that the company is justified in doing what may be necessary to prove the commercial possibilities of this branch of its business.

HEVEA PLANTING IN SUMATRA.

In July, 1917, a new subsidiary was incorporated under the laws of the state of Delaware, named the Continental Plantation Co., and to it has been transferred a lease for one hundred and twenty-five years on approximately 20,000 acres of land located within the province of Asahan, island of Sumatra, Netherlands Indies, and known as the Hoeta Padang Estates. The tract is twenty-five miles westerly from the port of Tandjong Balei on the strait of Malacca, and fourteen miles from Kisaran, the nearest public railway station. The lease, held from the Sultan of Asahan, has been officially approved by the government of the Netherlands Indies.

The property was visited and personally inspected by the president of the company, who satisfied himself that approximately 75 per cent of the area was unusually well adapted to the cultivation of *Hevea Brasiliensis* trees, which in 1916 produced 95 per cent of the world's supply of crude rubber, and of this total production 80 per cent came from plantations in the Middle East, such as it is now proposed to develop on the Hoeta Padang estates. Plans have been formulated, financial provision made and work started to clear, plant and carry to maturity the first unit of 4,000 acres, which it is expected will ultimately produce at least 1,600,000 pounds of dry rubber per annum at a cost equal to the lowest of the world's production.

STEAMSHIP INVESTMENTS.

In December, 1916, your company disposed of most of its steamship interests at a substantial profit. This profit and the dividends received from the prior operations of the steamship companies constitute the principal part of the income shown by the annual statement attached. A one-half interest in a 5,200 ton (dead weight capacity) steamship has been retained, which asset is carried in our accounts at \$100,000.

INVESTMENT SECURITIES.

This item represents a portion of the company's temporarily unemployed surplus which has been invested in bonds and short term notes. The value of the same shown in the balance sheet has been adjusted to the market quotations as of July 31, 1917.

C. H. CARNAHAN, President.

October 1, 1917.

The Intercontinental Rubber Co.

DRAWBACK ON CHEWING GUM.

Drawback has been allowed on chewing gum manufactured by the Chiclé Products Co., of Newark, New Jersey, with the use of refined sugar produced in whole or in part from imported raw sugar. The quantity of refined sugar which may be taken as a basis for the allowance of drawback shall not exceed the quantity appearing in the exported chewing gum, as shown in the sworn statement of the manufacturers, dated July 30. Rate effective on and after June 25, 1917.

Supplemental sworn schedules showing changes in the formula, methods of packing, or brand names may be filed, and upon verification of such schedules drawback may be allowed on chewing gum manufactured and exported in accordance therewith.

The Rubber Trade in Great Britain.

By Our Regular Correspondent.

WITH regard to the raw rubber situation, steady buying for future requirements is the rule, as it is generally held that the present favorable price will show a rise rather than a decline in the near future. Of course, a good deal depends upon shipping facilities from the east, and at the time of writing there is an imperative call for more cargo space to be made available for certain food products, which means less space for rubber. The premium on washed Brazilian Para, though now 1s. 6d. per pound, compared with best smoked plantation sheet is well maintained, as for certain classes of government work nothing but Brazilian is still being used. With regard to rubber manufactures generally, however, it is getting increasingly difficult to find goods in which Brazilian fine, once considered indispensable, has not now been replaced wholly or partly by the plantation product. The bulk of the rubber manufacture is still concerned with war material, further orders for which are confidently expected both from our own government and those of our allies.

COTTON CLOTH.

The position with regard to the cotton trade, in which production has been drastically cut down on account of shortage of raw material, is naturally of much concern to the rubber trade. Naturally the price of cotton cloth has advanced considerably, and those proofing firms which possess stocks bought at old figures, or which have deliveries still to be made under old contract prices, are congratulating themselves on their position as compared with that of their competitors who are denuded of stocks. With regard to special cloths for waterproofing, most of the wholesale houses are very short, and it is clear that certain large contracts for proofed cloth, which are expected to be given out shortly, will be competed for by far fewer firms than has been customary in the past, it being generally recognized that those who have to buy their cloth at present prices are quite out of the running with those who have it in stock at old figures.

HOLLOW BALLS.

A matter of some importance in the ordinary trade is the rise in prices of the various hollow balls, announced by the British manufacturers as the first advance in the past five years. There are only one or two manufacturers of these goods in the kingdom, and prices for a long time past have been fixed by the international convention of British and German firms, which was formed over thirty years ago. I do not know much about hollow balls myself, except the lawn tennis variety, but it is a common complaint that these are not up to the pre-war standard, though in many cases the complaints seem to be with the stitching of the cover rather than with the rubber. It is quite probable that quality cannot be maintained without a rise in price, though when it comes to doubling the retail price of small playing balls it can hardly be expected that the sales will be maintained.

DUNLOP SHARES.

The sensation of August was the £4,000,000 purchase of ordinary shares of the Dunlop Rubber Co., Limited, by Messrs. Beecham & White, acting for certain financial interests. A month or two ago I referred to the speculative buying and rise in quotation of these shares, though no public information was then available as to what was in the wind. The future may have other surprises in store, but at present there is nothing to support the idea that the tire makers of Great Britain are combining to fight the new foreign competition that has arisen. Indeed, we had recently the assurance of the chairman of the Dunlop company to this effect. At the same time there is naturally a good deal of speculation as to the inner meaning of this huge financial transaction, and it is

generally felt that further developments will follow in the near future.

WHEN ANALYSTS DIFFER.

In a recent Police Court case in London, the B. F. Goodrich Co., Limited, was summoned for making a false statement respecting a quantity of superheat packing for which an export license was required, the falsity of the statement being that it contained only about five per cent of rubber, whereas the government analyst found it to contain nearly 20 per cent. It was given in evidence for the defendants that the amount contained was actually under five per cent. The magistrate expressed his surprise at the extraordinary discrepancy shown in the analyses and said that under the circumstances he would not convict. I know nothing of the details of this case, which is an important one under present conditions, and it would be interesting to know if the government analyst sticks to his figures. Analyses of mixtures with only a small percentage of rubber in them are of course a matter of considerable difficulty, a difficulty which largely vanishes when the analyst on one side has the original composition of the mixture made known to him. If the magistrate in this case knew more about the rubber trade, he would not have been so startled at the wide divergence in the figures, for rubber divergencies, though not often to the amount of 15 per cent, are matters of everyday occurrence. For instance, there are certain products known as rubber pastes which, if merely African flake, present no difficulty, but which, if composed of a mixture of rubber with various other organic bodies, are exceedingly tough nuts for the analyst to crack. Some of these analyses are of the nature of a research, and yet they are sent out with the request, "kindly let us have your analysis tomorrow." To say nothing of the difficulties met with nowadays with the extended use of mineral rubber which contains no rubber, there is the question as to whether rubber means only the hydrocarbon, or whether it should include its associated resins, which in certain cases form quite an important factor in the calculation.

RUBBER THREAD.*

I know nothing personally about rubber thread manufacture in America, but from what I know of the imports of American thread into Leicester and Paris for the elastic fabric industry I had gathered that its manufacture was conducted on much the same lines as in British rubber works. This opinion does not gain much support, however, from a perusal of an article on this subject by Georges Dumont in "The Rubber Age," the processes described being mainly those associated with the names of Hancock, of London, and Rattier and Ginbut, of Paris, in the now remote past. Possibly some elastic thread may still be made by means of forcing rubber solution through a die, but as a manufacturing process this was given up in London and Paris half a century ago on the introduction of lathe cutting of the vulcanized spread sheet. By the way, the author is not quite correct in saying that Charles Macintosh was the first to manufacture rubber thread on an industrial basis in 1850, as he died in Scotland in 1843. It would be more correct to say that in 1850 the Manchester firm of Charles Macintosh & Co., Limited, in which he was one of the partners, made an arrangement with Hancock to start the manufacture of vulcanized rubber thread on a large scale. With regard to the author's statement that the wearing qualities of the elastic thread of today are not equal to the product of twenty or thirty years ago, I do not think that any deterioration can be shown to exist in the thread produced by the British makers to-

*The thread process referred to has not been used in the United States for more than fifty years.—The Editor.

day compared with past times. The trouble is that the elastic web weavers, from motives of economy, have taken to using finer counts and these are less resistant to atmospheric oxidation than are the coarser counts. As I have said, I know nothing about American rubber thread manufacture; but as regards England, there is little in Mr. Dumont's paper to make our manufacturers say that their practice has been given away.

A RECENT PATENT.

Despite the numerous failures of the past—from a financial standpoint—another patent has been taken out for the recovery of the fabric from old rubber tires. M. Debaugé, of Paris, the patentee, states that the fabric, if preserved, has a considerable commercial value. In view of the present position of the cotton trade, this statement should carry more weight than it would have been entitled to a year or two ago; but all the same I imagine there will be many sceptics as to the value of a process which recovers the fabric while the vulcanized rubber goes into solution in xylol. I am not quite certain whether it is proposed to treat the whole tire in the autoclave with xylol only, or whether the solid rubber is removed as far as possible first; but at any rate the fabric with vulcanized rubber adhering to it is to be treated with the solvent and the rubber completely recovered. There are of course many solvents of vulcanized rubber at elevated temperatures, but what is the commercial value of the rubber when it has been recovered?

THE FRANKENBURG ESTATE.

The late I. Frankenburg, whose death was mentioned in the July issue, left an estate valued at £405,966, of which about £20,000 goes to various local charities. Although many persons expressed surprise at the large sum left, this view was not shared by those acquainted with the present magnitude of the business, which was commenced many years ago on a part of the present site in Salford, Manchester. The business is left mainly in the hands of Mr. Frankenburg's three sons, one of whom, Lieutenant Sydney Frankenburg, was recently reported wounded in France.

FRENCH NOTES.

THE Société Commerciale du Caoutchouc, Paris, reports that in spite of transportation difficulties, labor shortage and scarcity of fuel, the year 1916 proved very satisfactory and results obtained were better than during 1915. Of the different branches exploited by the company, the waste and reclaimed rubber departments were most profitable. Their financial position is strong, although there was a slight decrease in assets, owing to the necessary depreciation which the stock had to undergo in order to prevent miscalculation and consequent dis-appointment.

DESTRUCTION OF THE LUFBERG WORKS.

The total destruction of the Lufberg works at Chauny has caused no small amount of agitation among French rubber manufacturers, who are thus deprived of their only home source of white and brown factice. For, although a firm at Rouen produces brown factice, the quantities are insufficient to meet the demands of French consumers. Another circumstance contributing to the unpleasantness of the situation, is the fact that factice is on the list of prohibited imports. Consequently, a request for the deletion of the article from the list has been addressed to the Department of Commerce. It appears that French manufacturers will now turn to England for their supply.

The Lufberg works also produced golden sulphuret of antimony, and a good deal of excitement was aroused among French manufacturers of this chemical, when it became known that the president of the Syndicat Professionnel des Caoutchoucs, Tissus Elastiques, Toiles Cirées et Toiles Cuir, had written

to the Department of Commerce requesting the deletion of the item, golden sulphuret of antimony, from the list of prohibited imports, on the ground that the destruction of the Lufberg works had deprived France of the only producers of it.

The astonishing part of the matter is that it was on the initiative of the Syndicat Professionnel itself that the manufacture of golden sulphuret of antimony was undertaken by several important firms.

CUSTOMS MODIFICATIONS AND REGULATIONS.

FRANCE AND ALGERIA.

IN the revised list No. 1 of the French ministerial decree of April 13, 1917, as amended by the decree of May 12, 1917, prohibiting the importation of foreign goods into France and Algeria, the items: Caoutchouc, balata, gutta percha—raw or melted down in lumps—and threads of vulcanized rubber, do not appear. It is, therefore, presumed that their importation into France and Algeria is now subject to the issue of import licenses by the French authorities.

SWITZERLAND.

The exportation of the following articles is specifically prohibited by a decree of the Federal Council, dated June 30, 1917: Braces and garters of elastic tissue; dress shields of rubbered tissue; rubbers for erasing ink or pencil marks; rubber stamps.

SALVADOR.

According to an executive decision of July 14, 1917, tennis shoes of canvas with rubber heels now come under the head of rubber manufactures and are dutiable to the amount of 1 peso per kilo (\$0.46 per pound, including surtax).

FOREIGN TRADE REPORTS.

JAVA.

IMPORTS from America are increasing, especially in the automobile and motor accessories line, the comparative figures for 1915 and 1916 being:

	1915.	1916.
Automobiles	number 303	2,251
Automobile tires	2,741	28,854

VENICE.

As one of Europe's most famous bathing beaches is at Lido Island, which is a part of the municipality of Venice, it might be well worth while for American manufacturers of rubber bathing caps to have a representative there for the introduction of such caps, as they are almost universally worn by the women bathers and many of the caps now on the market there are of a very inferior quality. Dealers have not been able to obtain new stocks.

The present time is the most favorable for the introduction of all classes of rubber goods. High prices will not prove so great an impediment to Americans in this market as fluctuating prices.

BRITISH GUIANA.

From January 1 to July 26, 1917, the amount of balata exported was 524,463 pounds. Of this total, 465,892 pounds went to the United Kingdom and 58,571 pounds to the United States. For the same period in 1916, the total quantity was 503,316 pounds, while the rubber exports came to 8,552 pounds in 1917, as against 7,893 for the corresponding period in 1916. The agricultural stations reported returns aggregating 2,725 pounds of rubber.

MEXICO.

The guayule rubber factory at Cedral, state of San Luis Potosi, has been reopened. Hundreds of persons find employment in the gathering and treating of guayule for this plant.

In the territory of Quintana Roo about 7,500,000 acres of public lands are open to exploitation. Rubber and chiclé figure among the principal forest products of this territory.

COLOMBIA—CARTAGENA.

Figures for the imports of rubber goods during 1915 and 1916 show a considerable increase, as will be seen from the accompanying table:

	1915	1916
United States	\$3,947	\$17,506
United Kingdom	3,595	6,921
Other countries	1,377	3,295
Totals	\$8,919	\$27,722

Rubber exports from the Cartagena district to the United States during the past two years amounted to 208,432 pounds, valued at \$78,240 in 1915, as compared with 590,603 pounds, valued at \$183,519 during 1916.

THE SITUATION IN MALAYA.

By a Special Correspondent.

RUBBER ESTATES AND COCONUTS.

IT has been suggested that owing to a very probable demand for fatty foodstuffs after the war, copra will suddenly come to the fore. When normal shipping conditions are restored and ample cargo space becomes available, those estates cultivating rubber and coconuts may find in the latter a valuable secondary crop and their prospects, consequently, worthy of consideration.

F. M. S. EXPERIMENTAL PLANTATIONS.

The report of the work of the experimental plantations during 1916, shows that progress is steady. The total yield of dry rubber for that year was 24,650 pounds. Labor conditions were satisfactory, roads and buildings in good condition and the general health of the coolies was very fair.

Unfortunately, it was found that a number of old rubber trees at the Kuala Lumpur Experimental Plantation were attacked by *Ustilina Zonata* and *Poria*. Consequently, the roots of about 800 trees have been exposed to investigate the prevalence of the disease.

A great quantity of plants and seeds was distributed among numbers of Malayan planters and applicants in different parts of the world. Altogether, almost one million rubber seeds, for planting purposes, were disposed of.

STRAITS SETTLEMENTS IMPORTS FOR 1916.

Now that it is realized what a rapidly expanding share in the world's trade is falling to Japan, it is interesting to compare some Straits Settlements imports from that country with those from other sources.

	Japan.	United States.	United Kingdom.	Europe.
Motor vehicles, parts and accessories	\$73,000	\$1,910,000	\$379,000	\$118,000
Cycles, parts and accessories	286,000	2,000	410,000	3,000
Totals	\$359,000	\$1,912,000	\$789,000	\$121,000

PENANG EXPORTS OF RUBBER TO UNITED STATES.

The United States is continually increasing its direct imports of rubber from Penang. For the quarter ended June, 1917, the figures are 5,702,838 pounds, representing a value of \$3,600,539, as compared with 2,495,920 pounds valued at \$1,583,200 during the same period of the previous year; while the amounts for the half years January to June, 1916 and 1917, are 4,378,377 pounds, valued at \$2,767,450, and 10,006,409 pounds, valued at \$6,088,020, respectively.

LINGGI PLANTATIONS, LIMITED, ATTAINS ITS MAJORITY.

The Linggi Plantations, Limited, the well-known Malayan rubber-producing company, attained its majority in the year 1916.

Formed in 1895, under the name of the Linggi Liberian Coffee Company, Limited, to acquire 1,000 acres in the Malay Peninsula with the purpose of cultivating coffee and similar crops, the company met with one disaster after the other. In 1898, upon the advice of Malcolm Cumming, the manager, it was decided to abandon coffee and plant rubber instead. But here, again, obstacles arose. Shareholders were unwilling to support

the young enterprise and it was found necessary to cut railway sleepers from timber on the property to maintain the existence of the company.

However, the remarkable perseverance and insight of manager and directors was in due time repaid, for, as is known, Linggi now occupies the front rank among rubber producing companies.

It became dividend-paying on its ordinary shares in 1905, and during the twelve years from that year to 1917, the sum of £1,172,516 (\$1,862,580), or 100 per cent per annum, was paid as dividends to the ordinary shareholders.

The total planted area to date is 8,360 acres, and the output for 1916 was 2,158,046 pounds, as against 1,548,679 pounds in 1915.

New areas of jungle land are being examined with a view to further development, although present conditions prevent undertaking extensive work in this direction.

THE RUBBER LANDS ENACTMENT.

The agitation of rubber planters in Malaya against the alienation of lands during the present year, has led to the enforcement of the so-called Rubber Lands (Restriction) Enactment, 1917, in the Federated Malay States. The law was published in the "Government Gazette" of July 20, 1917, when it came into force. Especially noteworthy are the following paragraphs:

"2. For the purpose of this enactment—

"(a) 'Land' means land in the Federated Malay States which is cultivated with rubber and includes land which is, in the opinion of the resident of the State wherein the same is situated, suitable for cultivation with rubber and also land held under a title the terms, express or implied, whereof are not inconsistent with a right to cultivate the same with rubber;

"(b) 'Malay' means a person belonging to any Malayan race who habitually speaks the Malay language or any Malayan language and professes the Moslem religion;

"(c) Every Asiatic born within a State which is one of the Federated Malay States shall be deemed to be a subject of the ruler of such State;

"(d) In any question as to the nationality of a person the burden of proof of nationality shall be upon such person.

"4. Subject to the provisions of this enactment, no person or corporation shall after the commencement of this enactment, and so long as the same remains in force, be competent to acquire from any other person or corporation or from the Government or otherwise howsoever, any land or any right, joint, several or other, of ownership or occupation of or in any land, excepting only—

"(a) British subjects;

"(b) Subjects of the ruler of any of the Federated Malay States;

"(c) Persons and corporations authorized by a written authority granted under section 5, to the extent of the authority so granted; and any agreement or declaration of trust, whether accompanied by possession or not, whereby any person other than those hereinbefore excepted, acquires or shall acquire at some future date any land or any right as aforesaid in land shall be null and void and of no effect.

"5. (1) The resident of a State may grant to any Malay and with the approval of the Chief Secretary to Government to any person or to any corporation which is incorporated in His Britannic Majesty's Dominions or in the Federated Malay States a written authority under his hand to acquire land in such State. Such authority shall be limited to the acquisition of particular lands to be specified therein or of lands of or not exceeding a specified area, and shall be subject to such conditions (if any) as shall be expressed therein; but such authority shall not be granted to any person unless such person appears to the resident to have resided in the Malay Peninsula or the Colony for a term of not less than seven years and to intend to continue to reside therein.

"(II) No authority granted under this section shall be transferable."

THE RUBBER TRADE IN SOUTH AFRICA.

By a Special Correspondent.

TAKING existing conditions into consideration, the year 1916 was remarkably active and prosperous for South Africa. Imports and exports showed a very marked increase, due, however, rather to inflated prices than to greater quantities. The difficulty experienced in obtaining necessary food supplies and manufactures from overseas, brought home to the South African the realization that he must make himself more independent of foreign markets, with the result that he placed larger areas under cultivation and established many new manufacturing industries. However, though South Africa has fared better than most countries, tonnage is becoming more and more restricted, causing much delay in shipments.

The following figures give the arrivals at three important ports during 1915 and 1916:

	1915.		1916.	
	Steamers.	Sailing Vessels.	Steamers.	Sailing Vessels.
Port Elizabeth	358	10	329	9
East London	376	5	389	12
Durban	988	—	1,389	—
Totals	1,722	15	2,107	21

Of the cargoes landed at these ports during 1915 and 1916 may be noted:

	1915.				1916.			
	Port Elizabeth.	East London.	Durban.	Totals.	Port Elizabeth.	East London.	Durban.	Totals.
Rubber Goods, including—								
Tires	\$651,138	\$33,779	*\$160,175	\$845,092	\$896,838	\$60,880	*\$508,905	\$1,466,623
Bicycles and Tricycles	193,755	7,085	74,028	274,868	338,996	10,590	98,975	448,561
Motor cars	977,261	191,439	581,677	1,750,377	1,341,850	500,524	1,079,482	2,921,856
Motorcycles	290,497	18,761	168,356	477,614	196,986	21,953	424,456	643,395
Conveying hose .....	.....	.....	120,765	120,765	.....	.....	132,773	132,773
Totals	\$2,112,651	\$251,064	\$1,105,001	\$3,468,716	\$2,774,670	\$593,947	\$2,244,591	\$5,613,208

*This includes rubber.

In 1916, 60 per cent of the total imports of rubber and canvas hose, amounting to \$240,000, entered at Port Elizabeth and East London, as against 27 per cent, representing \$89,900, in 1913.

America's share in all this trade has been steadily increasing. During 1916, 66 per cent of the mackintoshes and oilskins and 66 per cent of the garden hose entered at Port Elizabeth and East London were supplied by the United States. Nearly all the steam and suction hose and 30 per cent of the engine packing arriving at Port Elizabeth came from America, while the 1916 sales of automobile tires were 250 per cent more than in 1915, or 33 per cent of the total. American automobiles landed here comprised 70 per cent of the total and motorcycles 33 per cent. All the automobiles and motorcycles imported into Durban came from the United States.

ENCOURAGING STATISTICS.

The total values of vehicles, tires and fuel imported into South Africa was \$5,642,240 in 1915 and \$8,594,200 in 1916, showing an increase of 52 per cent. Of these totals the United States supplied 55 per cent, or \$4,697,871, in 1916, and the United Kingdom 24 per cent, or \$2,085,325. The rest came chiefly from France and Italy. A notable feature was the increase in automobiles, which rose from \$2,255,268 in 1915 to \$3,744,961 in 1916, the share of the United States being 72 per cent. The motorcycle trade, too, expanded, the figures for 1916 being \$791,497, as against \$543,257 in 1915. In the former year, 66 per cent came from the United Kingdom, while American sales were 50 per cent higher than those of any preceding year.

The sale of American tires increased from 19½ per cent of the total in 1915 to 32 per cent in 1916. Japan has lately entered this field and furnished accessories to the value of \$2,696 in the past year.

South Africa is one of the greatest mineral producing countries in the world, and upon her vast mining industry depends her

prosperity, and upon the demands created by it is based her foreign trade.

DIFFICULTIES IN TRANSPORTATION.

Cut off from her usual markets, she is now looking more and more to America to supply her wants, but there are several hindrances to trade with the United States. The chief obstacle is the inadequate direct shipping service between that country and South Africa. Besides this, there are the high freight rates, which have increased more, proportionally, between the United States and South Africa than between the United Kingdom and this country.

The local merchant prefers to deal directly with manufacturers or their export representatives. Credit from 30, 60, to 90 days is expected, if he has been dealing with the same American firm. In giving quotations and catalog prices, American manufacturers would do well to state them in English currency.

RECENT MOTOR VEHICLE SHOW AT JOHANNESBURG.

At the Annual Motor Show held by the South African Society of Motor Traders at Johannesburg, from April 4 to 10 last, almost all the exhibits were American. The show indicated the growth of the demand for motor vehicles, etc., in the Union. The April issue of the "African Motor" contains technical details of practically all types of motor vehicles, etc., at present selling in South Africa.

DUTCH EAST INDIES LETTER.

By a Special Correspondent.

A MOST interesting debate recently took place at a meeting of the Society for the Promotion of Agriculture & Industries at Djember, which Dr. P. J. S. Cramer, formerly Director of Agriculture in Surinam, and now chief of the Selection Station of the Institute for Plant Diseases of the Department of Agriculture, Buitenzorg, Java, and H. J. van Hasselt, director of the caoutchouc industry of the Forestry Department of the Dutch East Indies, appeared in person to defend their widely differing views concerning the problem, "One or more crops per plantation."

While on leave in Holland, Mr. van Hasselt had been ordered by the Minister for Colonial Affairs to report on agricultural conditions in Surinam.

It was during his stay in the latter country that he lectured on the above question at Paramaribo, stating that: (a) The principle of not staking all in one direction, leading to the cultivation of more than one crop on the small Surinam estates, is an economical error. (b) Estates in the Dutch East Indies are almost exclusively devoted to one crop. (c) Capital is interested in one-crop estates only. (d) Plantations with more than one crop are backward.

These points were contested by Dr. Cramer in a series of articles which appeared in the "Nederlandsch-Indisch Rubber-tydschrift."

At the meeting Mr. van Hasselt explained his lecture, adding that he did not include catch crops, and that he agreed with the idea of starting with plural crops to minimize risks, and in the end cultivating one crop only. Dr. Cramer, in his turn, declared that he had criticized the lecture because it gave a wrong impression of planting conditions in the Dutch East Indies.

The meeting ended with the unanimous vote that:

(1) Plural cultures are of real advantage in connection with minimizing risk, but that these advantages disappear when the system is injudiciously pursued.

(2) It is as desirable for big as for small planting enterprises to diminish risks, though the manner of doing so must vary.

BRAZILIAN NOTES.

MUCH excitement has been aroused in the Legislative Assembly of the Government of Amazonas in connection with an agreement of May 24, 1917, between that state and the state of Matto Grosso, concerning the territorial limits of fiscal jurisdiction. It appears that by this contract, which is provisional, the right to collect taxes in the territory enclosed by the river Aripuana and its tributaries has been ceded by Amazonas to Matto Grosso. As large quantities of products, rubber among them, pass through the region, the loss to Amazonas is considerable. Meanwhile the Legislative Assembly has voted that the Government shall provide:

- (1) That the sums of money diverted from Amazonas to Matto Grosso in virtue of this contract, be restored to Amazonas' coffers.
- (2) That no customs office shall be established or maintained on the Aripuana without the sanction of the Legislative Assembly.

BOND REQUIREMENT DISCONTINUED.

João Theophilo de Medeiros, inspector of Customs at Manaus, gave an important decision in the matter of Braga Vieira & Co. v. the Customs Board at Porto Velho. The company in question appealed against the practice of requiring a bond of responsibility for the forwarding of rubber coming from Bolivia to the customs of Para and Manaus. The decision was, that the practice of demanding a bond of responsibility should cease, and that the rubber should be allowed to pass if accompanied by necessary documents stating quantity, quality and marks, these documents, bearing the official seal, to be sent to the respective customs offices.

RUBBER SHIPMENTS TO GERMAN FIRMS.

Attention is being called to the continuance of the Lloyd Brasileiro in its policy of favoring enemy firms. One would have thought that now that Brazil had practically broken relations with Germany, there would be an end of such practices. But according to latest reports the total amount of rubber shipped from Brazil since April 15, when relations with Germany were suspended, is 3,320 tons, of which no less than 653 tons were to German or affiliated concerns, while the remaining 2,667 tons were distributed among allied, American, Brazilian and Portuguese firms.

EXPORTS AT RIO INCREASE.

Brazilian exports of rubber have also increased somewhat. Commercial Attaché Downs, at Rio de Janeiro, reports that rubber exports for the six months ended June 30, which dropped from 21,414 tons in 1913 to 17,464 in 1916, have increased to 20,845 tons in 1917. The report shows a remarkable growth of export business in manganese and foodstuffs.

LONDON RUBBER EXPORTS INCREASE.

Consul General Skinner, at London, reports that while the total value of the declared exports from London to the United States for the eight months ended August 31, 1917, showed a decrease of over \$8,000,000, as compared with the same period for 1916, the exports of rubber showed an increase of \$11,717,112.

FRENCH COLONIAL PRODUCTS EMBARGOED.

On the list of many chemicals, woods and other articles, export of which has been prohibited from French colonies and protectorates, except Tunis and Morocco, are barytes and insulating materials, rubber being excepted.

STANDARDIZED RUBBER FOR TRINIDAD.

THE rubber committee of the Trinidad Board of Agriculture in a recent report states that, while the rubber industry is not likely to occupy so important a position as cocoa, sugar or coconuts, it should be in the front rank of such secondary crops as limes, rice and coffee.

From January 1 to August 1, 1917, the quantity of rubber shipped from here amounted to 12,102 pounds, against 5,063 pounds for the same period of the preceding year.



MULTIPLE "V" TAPPING, RICHMOND ESTATE, TOBAGO.

One of the recommendations of this committee is that tapping methods be standardized and the basal "V" method adopted on young trees, to be followed later by a single cut on a quarter of the circumference.

Cooperation among rubber growers is advised for the wholesale purchase of tapping tools and cups.

Earthenware cups are advised in preference to those of tin, because of their immunity from rust, and, being made without angles, they can be more easily cleaned.

It is contended that such standardization of methods and co-operative production would produce rubber of a uniform type, and of a superior quality.

The Société Financière des Caoutchoucs at Kuala Lumpur has engaged Gerald E. Perry, of Amherst, Massachusetts, a graduate of the Massachusetts Agricultural College and for the past two years assistant to Dr. Chamberlain, professor of organic and agricultural chemistry at the latter institution. Mr. Perry sailed from San Francisco, September 1, and when he arrives at Kuala Lumpur he will cooperate with Vincent Sauchelli, a former classmate, in investigating the diseases of rubber trees and their control.

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED AUGUST 21, 1917.

- N**O. 1,237,274. Antiskidding device. L. S. Bacon, Washington, D. C.
 1,237,307. Typewriter platen. P. de Clamecy, assignor to The De Nevers Typewriter Co.—both of Boston, Mass.
 1,237,349. Demountable rim. W. C. Long, Loudonville, Ohio.
 1,237,369. Antiskidding chains. T. E. Murray, New York City.
 1,237,404. Life preserver. A. Stefanowski, Milwaukee, Wis.
 1,237,512. Pneumatic tire pressure gage. C. Harrison and K. Lamond—both of Vancouver, British Columbia, Canada.
 1,237,553. Tire tool. C. E. Pierce, Detroit, Mich.
 1,237,574. Cushion tire. E. L. Suess, Pittsburgh, Pa.
 1,237,613. Rim for vehicle wheels. R. S. Bryant, Akron, assignor to The Standard Welding Co., Cleveland—both of Ohio.
 1,237,614. Rim for vehicle wheels. R. S. Bryant, assignor to The Standard Welding Co.—both of Cleveland, Ohio.
 1,237,619. Fountain pen. H. G. Craig, assignor to Kraker Pen Co.—both of Kansas City, Mo.
 1,237,660. Elastic ligature. H. W. Lakin, Boston, Mass.
 1,237,692. Wheel structure comprising a cross cut demountable rim. L. H. Perlman, New York City.
 1,237,698. All rubber self healing inner tube for pneumatic tires and process of making same. G. J. Reuter, Newark, N. J.
 1,237,893. Detachable rubber heel. G. E. Gilbert, Toronto, Ontario, Canada.

ISSUED AUGUST 28, 1917.

- 1,238,099. Pneumatic tires. J. H. Brown, assignor to Brown Perfection Co.—both of New York City.
 1,238,125. Elastic tire core. R. Fukuda, Yokohama, Japan.
 1,238,176. Demountable rim. W. J. P. Moore, New York City.
 1,238,205. Tire mileage register. A. D. Shaw, Savanna, Ill.
 1,238,390. Drenching tube. O. Crittenden, Ashland, Ohio.
 1,238,440. Pneumatic tire calipers. A. O. Running, Hawkins, Wis.
 1,238,476. Teat cup for milking machines. A. E. Anderson, Randolph, N. Y.
 1,238,490. Antiskid device. W. H. Brown, Margaretville, N. Y.
 1,238,535. Pneumatic tire calipers. G. H. Lewis, assignor to Fisk Rubber Co.—both of Chicoee Falls, Mass.
 1,238,553. Tire tread fastener. L. S. Morse, Ocean Park, Cal.
 1,238,567. Leak alarm for pneumatic tires. E. J. F. Quirin, Tioga Center, and G. A. Payne, Buffalo—both of New York.
 1,238,648. Rubber boot repairer. C. F. Dilks, assignor of one-half to W. Carl—both of Bridgeton, N. J.
 1,238,649. Tire tool. C. W. Doyle and C. F. Rothwell—both of Columbus, Mont.
 1,238,657. Fountain pen. M. Finstone, Brooklyn, N. Y.

ISSUED SEPTEMBER 4, 1917.

- 1,238,741. Vehicle wheel rims for dual solid tires. R. S. Bryant, assignor to The Standard Welding Co.—both of Cleveland, Ohio.
 1,238,769. Tire rim. E. Hopkinson, East Orange, N. J.
 1,238,879. Tire rim. E. Brown, Tulare, Cal.
 1,238,901. Hot water bandage. C. S. Ferguson, Columbus, Ohio, assignor of one-half to I. L. Broadwin, New York City.
 1,238,996. Sectional rim. J. J. Foley, San Francisco, Cal.
 1,239,022. Pressure regulating valve for pneumatic tires. L. B. McClean, Green Bay, Wis.
 1,239,118. Demountable rim. H. B. Manning, Fall River Mills, Cal.
 1,239,254. Means for attaching a tire to a wheel. G. G. Buckland, San Francisco, Cal.
 1,239,296. Life preserving garment constructed of waterproof fabric. A. Nogar, Reading, Pa.
 1,239,312. Non skid grip for tires. P. Smith, Foresthill, Cal.
 1,239,350. Hot water bottle. A. S. Campbell, Medford, Mass.
 1,239,434. Rubber overshoe. E. A. Saunders, South Bend, Ind.

THE UNITED KINGDOM.

ISSUED AUGUST 1, 1917.

- 106,748. Armored air tube. L. S. Odell, Forestville, New York, U. S. A.
 106,768. Medical baths of rubber, etc. G. Inganni, 21, Corso Oporto, Turin, Italy.
 106,904. Crutch with rubber tip. E. Walters, Bourke street, Darlinghurst, H. S. Randall, Sunny Corner, Brook street, Coogee, and J. T. Harrison, Tranmere street, Drummoyn—both of Sydney, Australia.
 106,908. Pouches of gathered waterproof material to hold absorbent breast pads. E. A. Garbutt, 193, Roundhay Road, Leeds.
 106,972. Seamless rubber teats. F. C. Jones, Warrington Lodge, King's Road, Richmond, Surrey.

ISSUED AUGUST 15, 1917.

- 107,249. Rubber pad for ink bottle designed for filling fountain pens. S. Barry, 290 Queen street, Auckland, New Zealand.
 107,354. Pneumatic tire with balata and canvas breaker strip. A. A. Crozier, 3 Woodquest avenue, Herne Hill, London.

- 107,358. Rubber core adapted to fit an ordinary tire cover. G. E. Gilmore, 1481 East 71st street, Cleveland, and F. V. Roessel, 385 Spalding street, Akron—both of Ohio, U. S. A.

ISSUED AUGUST 22, 1917.

- 107,485. Galvanic battery comprising a rubber ring. J. E. Preston, 55 Banner street, London.

ISSUED AUGUST 29, 1917.

- 107,548. Hair curler comprising a rubber ring. A. A. Thornton, Quality Court, Chancery Lane, London.
 107,592. Surgical truss pad of hard rubber. W. N. Best, 383 Gates avenue, Brooklyn, New York, U. S. A.
 107,624. Hypodermic syringe having a jointing disk of gutta percha, india rubber or vulcanite. S. J. Everett, and A. Kirkman—both of 324 London Road, Thornton Heath, Surrey.
 107,666. Jacket for wheel tires. H. S. Jones, 285 High Holborn, London.

THE DOMINION OF CANADA.

ISSUED MAY, 1917.

- 176,705. Non skid pneumatic tire. T. C. Mussen, Toronto, Ontario, Canada.
 176,796. Demountable rim. C. L. Adair, Benton, Pennsylvania, U. S. A.
 176,835. Sun shade for pneumatic tires. R. C. Jeboult, Edmonds, British Columbia, Canada.
 176,843. Demountable rim. O. Le Beau, Montreal, Quebec, Canada.
 176,864. Stamp moistener. C. M. Pratt, Towanda, Pennsylvania, U. S. A.
 176,877. Rubber stamp. L. G. Solenberger, Chambersburg, Pennsylvania, U. S. A.
 176,924. Pneumatic tire and tube. The Reliance A. C. Co., Inc., New York City, assignee of I. J. Webster, Haverhill, Massachusetts—both of U. S. A.
 176,942. Collapsible rim. L. P. Woodbury, Berkeley, and J. T. Parker, San Francisco, assignee of half the interest—both of California, U. S. A.
 176,960. Pneumatic mattress, pillow, etc. H. I. Williams, Barberton, and Elie L. Bechtel, Akron, co-inventors—both of Ohio, U. S. A.
 176,994. Colon irrigators. A. R. Fisher, New York, New York, U. S. A.
 176,999. Inner tube for pneumatic tires. A. E. Henderson, Toronto, Ontario, Canada.
 177,057. Rubber heel. The United Shoe Machinery Company of Canada, Limited, Maison-neuve, assignee of The United Shoe Machinery Company of Canada, Montreal—both of Quebec, Canada, assignee of J. F. Stardish, Winthrop, Massachusetts, U. S. A.
 177,067. Rubber and leather footwear. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, assignee of E. Hersey and P. Binkle, Kitchener, Ontario—all of Canada.
 177,088. Heel for rubber footwear. F. E. Payne and A. V. McDowell, assignee of a half interest—both of Middletown, Connecticut, U. S. A.
 177,092. Vehicle wheel comprising a solid rubber tire and pneumatic tube. G. S. Gallagher, assignee of a third interest of G. Schadee, co-inventors—both of New York, New York, U. S. A.
 177,127. Outer flexible metal tire for covering an inflated rubber tube. A. C. Bruce, Vancouver, British Columbia, Canada.
 177,129. Vulcanite arch support. A. A. S. Burns, Montreal, Quebec, Canada.
 177,236. Diving apparatus. The Leavitt Diving Armour Co., assignee to B. F. Leavitt—both of Toledo, Ohio, U. S. A.
 177,285. Rubber and textile conveyor belt. W. F. Bowers, San Francisco, California, U. S. A.
 177,293. Antiskid chain. F. A. Fox, New York, New York, U. S. A.
 177,316. Recoil pad. P. J. Krueger, Blue Island, Illinois, U. S. A.
 177,338. Wheel rim and solid tire construction. H. Rafovich, New York, New York, U. S. A.
 177,372. Tennis shoe. The Hood Rubber Co., assignee of N. E. Tousley—both of Watertown, and C. H. Roper, Belmont—all of Massachusetts, U. S. A.
 177,377. Pneumatic tire. The Sterns Tire & Tube Co., assignee of E. Sterns—both of St. Louis, Missouri, U. S. A.

THE FRENCH REPUBLIC.

PATENTS ISSUED (WITH DATES OF APPLICATION.)

- 483,206 (October 19, 1916). Elastic wheel system. Estruch Diaz de Lara.
 483,207 (October 17, 1916). Lubricant for preserving rubber. Estruch Diaz de Lara.
 483,228 (October 20, 1916). Improvements in suspenders. E. Shanks.
 483,274 (October 26, 1916). Vehicle wheels. N. O'Connor.
 483,285 (December 30, 1915). Casing for pneumatic bicycle tires. P. Nivet and J. B. Haegy.
 483,291 (October 27, 1916). Pneumatic tire with multiple air chambers. J. Huybrechts.
 483,300 (October 30, 1916). Elastic wheel. A. Cardoso.
 483,336 (November 3, 1916). Pneumatic tire, particularly adapted for heavy loads. M. A. Violet.

Chemical Patents will be found on page 20. Machinery and Process Patents on pages 23-24.

AUSTRALIA.

DATES OF APPLICATION.

- 972 (May 9, 1916). Elastic curtain ring. Helen G. Coldham, Queensland.
- 1,019 (May 17, 1916). Device for protecting surfaces of heels, tires and the like. W. Morrison, New South Wales.
- 1,222 (June 9, 1916). Rubber bottle stopper. G. C. Maas and W. Young, New South Wales.
- 1,496 (July 11, 1916). Life saving belt, consisting of two rubber compartments enclosed in cloth envelop and containing gas-generating charges. T. Ingaramo, Italy.
- 1,731 (August 7, 1916). Collapsible display wagon with rubber tired wheels. J. C. Preston, New South Wales.
- 1,781 (August 14, 1916). Device for promoting rain, comprising a conductor connected to a metallic net covering a balloon. J. G. Ballillie, Victoria.
- 1,821 (August 17, 1916). Sealed receptacle with rubber block for preserving fluid pressure of articles like tennis balls during storage. F. W. Stockton, Illinois, U. S. A.
- 1,925 (August 29, 1916). Paint sprayer with flexible conduits. B. F. Hopkins, California, U. S. A.
- 1,956 (September 4, 1916). Pneumatic hub for wheels with solid tires. A. Sawyer, Tasmania.
- 2,008 (September 8, 1916). Walking-stick ferrule with rubber block. J. L. Heaver, South Australia.
- 2,323 (October 16, 1916). Composition to prevent skidding of tires. C. Pacchetti, Italy.
- 2,518 (November 9, 1916). Shoulder braces with elastic straps. Helene V. A. Loring, Illinois, U. S. A.
- 2,933 (January 3, 1916). Dental suction disks with soft rubber section. N. Cohen and F. Bowerman, England.
- 3,235 (February 14, 1916). Method of spraying tire covers with rubber solution by means of compressed air. G. A. Urbach, Pennsylvania, U. S. A.
- 3,308 (February 21, 1916). Pneumatic tire without air tube—opening is closed by pressing a metal ring against soft rubber, the surfaces of which are secured to the ends of the tire. F. Kühne, Germany.
- 3,456 (March 13, 1916). Diving dress for great depths, comprising arm and leg pieces of flexible metal tubing with rubber coating. Leavitt Diving Armor Co., Ohio, U. S. A.
- 3,503 (March 19, 1916). Non-puncturable resilient tire of hollow spring steel with telescopic ends. N. F. Hutchinson, Victoria.
- 3,749 (April 20, 1916). Gas mask with rubber pipes leading to nostrils. R. Donald, England.

TRADE-MARKS.

THE UNITED STATES.

- 95,598. The word FAN-C-EDGE, the C being surrounded with a scroll-work design—jar rings. The Mechanical Rubber Co., Jersey City, N. J.
- 100,925. The word KEYSTONE between two keystones—rubber tires, inner tubes, liners and patches for the same. Keystone Rubber Manufacturing Co., Erie, Pa.
- 100,992. The words NIAGARA WHIRLPOOL—syringes. William C. Halleck, New York City.
- 103,374. The word ARCO in a triangular design—tire vulcanizing outfits and self-vulcanizing patches. A. R. Sales Co., Inc., Schenectady, N. Y.
- 104,388. The word PARAMOID—pneumatic rubber tires and rubber inner tubes. The Pharis Tire & Rubber Co., Newark, Ohio.
- 104,489. Representation of two arms holding a varnish can—insulating varnish, insulating compounds, insulating cloth, varnished cambric, insulating bias tape, rubber tape, friction tape, and cotton tape, all for electrical purposes. Irvington Varnish & Insulator Co., Irvington, N. J.
- 105,253. The words LIBERTY BOND—chewing gum and mints. John J. Dalton, Chicago, Ill.
- 97,115. The word TROPICAL in an ellipse—rubber tires, casings, and tubes. The Firestone Tire & Rubber Co., Akron, Ohio.

THE UNITED KINGDOM.

- 378,589. The word VARENECOSE—elastic hosiery for surgical and curative purposes. Le Brasseur Surgical Manufacturing Co., Limited, 90 Worcester street, Birmingham, England.
- 378,457. The word DISCUS—goods manufactured from india rubber and gutta percha, not included in other classes. S. Maw, Son and Sons, Limited, 7-12 Aldersgate street, London, E.C., 1, England.
- 378,924. The word KITE—golf balls. The North British Rubber Co., Limited, Castle Mills, Fountainbridge, Edinburgh, Scotland.
- 378,431. The word IAS—goods manufactured from india rubber and gutta percha, not included in other classes. Leyland & Birmingham Rubber Co., Limited, Golden Hill Works, Leyland, Lancashire.
- 378,603. The words THE LION TYRE—india rubber motor tires. The North British Rubber Co., Limited, Castle Mills, Fountainbridge, Edinburgh, Scotland.
- 379,030. The word AEROTUP—machine belting of balata. Henry Bennett Tetlow, trading as H. B. Tetlow & Co., 46, Manesty Lane, Liverpool.
- 377,957. The word THERMOID—packing and hose of all kinds not included in other classes. Thermoid Rubber Co., Whitehead's Road, Hamilton Township, Mercer County, New Jersey, U. S. A.
- 378,462. Representation of the discobolus—goods manufactured from india rubber and gutta percha not included in other classes. S. Maw, Son, & Sons, Limited, 7-12 Aldersgate street, London, E. C. 1.
- 378,698. The word SORAO—sponge substitutes (india rubber). Leeson Sponge & Rubber Co., Limited, New Enterprise Works, Chiswick, London, W. 4.

THE DOMINION OF CANADA.

- 22,539. A series of white transverse lines spaced at uniform intervals across the face of the brake lining—brake lining. Standard Woven Fabric Co., Walpole, Massachusetts, U. S. A.
- 22,566. The word PILOT—engine and machine packings and jointings of all descriptions; hose; every sort of india rubber and gutta percha goods; and insulating compositions and preparations of all kinds. The Beldan Packing & Rubber Co., Limited, London, England.
- 22,609. The word STORK—nursing bottles and rubber nipples. United Drug Co., Limited, Toronto, Canada.
- 22,619. Representation of an overturned cradle with a baby holding a feeding bottle, a dog having hold of the teat of the bottle in his mouth—dummy teats for use by infants, feeding bottle teats, teething rings and like goods for use by infants. A. S. Cartwright, Limited, Birmingham, England.
- 22,626. The word ACME in a circle above the words THE SOLE OF PERFECTIOR—shoe soles of rubber, rubber substitutes, rubber compositions or other materials. Dunlop Tire & Rubber Goods Co., Limited, Toronto, Canada.

AUSTRALIA.

- 21,352. A circle enclosing four bars on the upper of which two birds are perched, facing each other—games and sporting articles. Martins Birmingham, Limited, Birmingham, England.
- 21,354. Man's head enclosed in a circle and the word DUNLOP underneath—sporting articles. Dunlop Rubber Co. of Australasia, Limited, Melbourne, Victoria, Australia.
- 21,355. Man's head enclosed in a circle and the word DUNLOP underneath—rugs for personal use. Dunlop Rubber Co. of Australasia, Limited, Melbourne, Victoria, Australia.
- 21,356. Word OCEANIC—rubber and gutta percha manufacturers. Dunlop Rubber Co. of Australasia, Limited, Melbourne, Victoria, Australia.
- 21,357. Word OCEANIC—hose and packing. Dunlop Rubber Co. of Australasia, Limited, Melbourne, Victoria, Australia.
- 21,359. Word REGENT—hose and packing. Dunlop Rubber Co. of Australasia, Limited, Melbourne, Victoria, Australia.

NEW ZEALAND.

- 13,828. A design showing a map of Australia inside a bicycle wheel and bearing the word OCEANIC—hose and packing. Dunlop Rubber Co. of Australasia, Limited, 108 Flinders street, Melbourne, Victoria, Australia.
- 13,830. The word OCEANIC—hose and packing. Dunlop Rubber Co. of Australasia, Limited, 108 Flinders street, Melbourne, Victoria, Australia.
- 13,832. The word REGENT—hose and packing. Dunlop Rubber Co. of Australasia, Limited, 108 Flinders street, Melbourne, Victoria, Australia.

ITALY.

- 16,053. A winged foot dividing the word GOODYEAR—rubber for pneumatic tires. Goodyear Tire & Rubber Co., Akron, Ohio.
- 16,227. A winged foot dividing the word GOODYEAR and below it the words THE GOODYEAR TIRE AND RUBBER COMPANY above the words AKRON, OHIO, U. S. A.—rubber for wheels, for motor vehicles and other vehicles, tires for aeroplanes, air-chambers, rubber cement, vulcanizing apparatus, etc. The Goodyear Tire & Rubber Co., Akron, Ohio.
- 10,096. The word RONOLEKE—all kinds of hollow rubber articles, bottles, cushions, mattresses, etc. Sangers, London.
- 16,297. An Indian's bust with the word INDIAN written across the arms, while the words THE INDIAN TYRE are written next to it—tires and rubber goods. Ugo Florio, Sartori, Milan.

FRENCH REPUBLIC.

- 168,432. The word RADIO in quotation marks—rubber and rubber goods, toys, rubberized goods, elastic fabrics, waterproofing compositions, etc. Société "Radio" Agence Télégraphique d'Informations et de Publicité, Paris.
- 168,352. The words LE PARISIEN—rubber heels. Robert Ruepp, Paris.
- 168,353. The word TANK—rubber heels. Robert Ruepp, Paris.
- 168,354. The words LE CŒUR D'OR—rubber heels. Robert Ruepp, Paris.
- 168,439. The word RADIO—electrical goods, including gutta percha insulations. Société Agence Télégraphique d'Informations et de Publicité, Paris.
- 168,355. The words VULCAN ROBERT'S—rubber plates. Robert Ruepp, Paris.
- 168,471. The letters S. A. C. A.—aeroplanes and accessories. Société Auxiliaire de Constructions Aéronautiques, Paris.
- 168,604. The words LE "GÉNIE" CORSET—belts, corsets, bust-protectors, etc. Onésime Loum, Paris.
- 168,605. The word L'AS—suspenders, garters, belts, dress shields, rubberized fabric, elastic fabric, rubber toys, waterproof clothing. Société du Caoutchouc Manufacturé, 86-90 rue Notre-Dame-de-Nazareth, Paris.
- 168,606. The words LE SAUVEUR—suspenders, garters, belts, dress shields, rubberized fabric, elastic fabric, rubber toys, waterproof clothing. Société du Caoutchouc Manufacturé, Paris.
- 168,607. The words L'EDELWEIS—suspenders, garters, belts, dress shields, rubberized fabric, elastic fabric, rubber toys, waterproof clothing. Société du Caoutchouc Manufacturé, Paris.
- 168,661. The word MAGIC above, and words MARQUE DÉPOSÉE below a circle enclosing likeness of a magician repairing a rubber tire—composition for repairing tires and similar rubber articles. Marcel Hennequin, Paris.
- 168,673. The words BLACK BOAR SPECIAL—rubber heels. Pierre-Marie-Joseph-Jacques Zecchini, Paris.
- 168,674. The word BULL-DOG—rubber heels. Pierre-Marie-Joseph-Jacques Zecchini, Paris.
- 168,675. The words THE STERLING PAD—rubber heels. Pierre-Marie-Joseph-Jacques Zecchini, Paris.
- 168,676. The words SPEEDWELL "75"—small rubber heels. Pierre-Marie-Joseph-Jacques Zecchini, Paris.

- 168,752. The word RADIO—all kinds of rubber goods and accessories. Société "Radio," Agence Télégraphique d'Informations et de Publicité, Paris.
- 168,962. The word NEUILLY-AVIATION—wheels of automobiles, aeroplanes, cycles, etc., and all their parts and accessories. Pierre Saint-Omer Roy.
- 168,988. The words LA VULCANISATION NOUVELLE—all vulcanized articles and apparatus and substances for obtaining them. André Helbronner, Paris.
- 168,993. The words LA CHOUETTE—all kinds of rubber goods. J. Lick et Cie., Ivry-sur-Seine.
- 168,994. Owl's head enclosed in a circle—all kinds of rubber goods. J. Lick et Cie., Ivry-sur-Seine.
- 168,995. The words LA CHOUETTE below an owl's head enclosed in a circle—all kinds of rubber goods. J. Lick et Cie., Ivry-sur-Seine.
- 168,996. The words LA CHOUETTE below a full-sized owl perched on a bar—all kinds of rubber goods. J. Lick et Cie., Ivry-sur-Seine.
- 168,997. Full-sized owl perched on a bar—all kinds of rubber goods. J. Lick et Cie., Ivry-sur-Seine.
- 169,014. The head of a warrior of ancient Greece and the word PERICLES below—pneumatic furnishings. Société Française des Pneumatiques Dunlop, Paris.
- 169,022. The words LA MARNE—motor vehicles, bicycles, and their accessories. Jean Psalty, Paris.
- 169,184. The word LIBELLULE—dress shield. Madam Prévost, Paris.
- 169,257. The word TORPEDO—rubber heels and soles. Roseberg et Wertherman, Paris.
- 169,269. The word DEC—all kinds of belting. Eugène Decloquement, Paris.
- 169,355. On the upper and lower part of a tire which encircles the figure of Victoria bearing in one hand a standard, while on the other hand rests a tire, are inscribed the words PNEU VICTORIA and 1917, respectively—pneumatic and elastic tires for wheels of all vehicles. Amand Delille Daigre, Levallois-Perret.
- 169,388. The letters L and C on respective sides and the word ECLIPSE above the word DÉPOSÉE in the upper section of a garter clip which is on a black circular ground—garters, suspenders, belts, etc. Veuve Chauvet et H. Lagouthe, Paris.
- 169,389. A shield on which are a violet and a leaf, held by a scroll bearing the words MARQUE DÉPOSÉE—garters, suspenders, belts, etc. Veuve Chauvet et H. Lagouthe, Paris.
- 169,396. The words MIMOSÉES DE LA CORNICHE D'OR—rubber goods. Leon Montier, Paris.
- 169,447. A heavy circle enclosing the monogram V. P.—hard rubber insulations. Victor Pons, Paris.
- 24,933. The words QUEEN ALEXANDRA—haberdashery, including dress shields. Kirby, Beard & Co., Limited, Birmingham, England.
- 24,934. The words THE ROYAL—haberdashery, including dress shields. Kirby, Beard & Co., Limited, Birmingham, England.
- 24,947. The word AGRIFFA—all kinds of rubber accessories. The London India-Rubber Works (J. G. Ingram & Son, Limited). London E., England.
- 24,964. The word HANDYMAN—all kinds of accessories for automobiles, aeroplanes, etc. Hattersley & Davis, Limited, Sheffield, England.
- 24,965. The word HANDY—all kinds of accessories for automobiles, aeroplanes, etc. Hattersley & Davis, Limited, Sheffield, England.
- 24,966. The word HANDY twisted of rope and encircling the head of a sailor. In loops of the lower part of the rope, the letters H. & D.; below, the word REGISTERED TRADE MARK—all kinds of accessories for automobiles, aeroplanes, etc. Hattersley & Davidson, Limited, Sheffield, England.
- 25,030. A Rhombus, having lines radiating from its centre and the word PAIGE inscribed in it—automobiles and accessories. Paige Detroit Motor Car Co., Detroit, Michigan, U. S. A.
- 25,020. A Rhombus, in which is inscribed the word WELTUM, superposed on a black six point star—leather substitute. Jos. Dejong, London, E. C., England.
- 25,038. The words ROULO PATENT inscribed in a triangle, in the rounded corners of which is the letter V shut in by a semi-circle, while on either side of the triangle are the words ROULUNDS and FABRIKER, respectively, below the base, the word ODENSE—belting, air-chambers, tires and cases for automobiles, motor cycles and bicycles. A/S Roulunds Fabriker, Odense, Denmark.
- 25,055. The word RONOLEKE—hollow rubber goods, cushions, mattresses, bottles, etc. Sangers, London.
83. The word TANGO—rubber and all rubber manufactures. J. S. Fougerat, Neuilly-sur-Loire.
541. Word STABONITE—ebonite and similar products. Bayard de la Vingtrie, Le Mans.
- 10,373. The words DISSOLUTION FREDDY—a solution for gumming all rubbers. A. Lecomte, Lyon.

DESIGNS.

THE UNITED STATES.

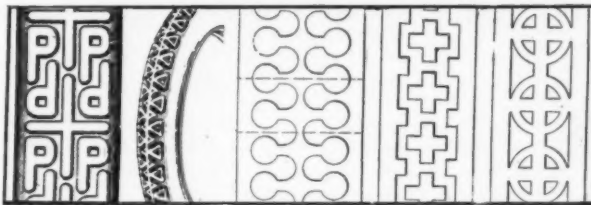
- 51,176. Playing-ball. Term 14 years. Patented August 21, 1917. A. T. Hopkins, Cleveland, Ohio, assignor to The Mechanical Rubber Co., a corporation of New Jersey.

DESIGNS FOR TIRES.

THE UNITED STATES.

- 51,072. Tire tread. Term 14 years. Patented July 24, 1917. T. J. Mell, Youngstown, Ohio, assignor to Perfection Tire & Rubber Co., Chicago, Ill.
- 51,184. Automobile tire. Term 3½ years. Patented August 21, 1917. C. W. McKone, assignor to The Gordon Tire & Rubber Co.—both of Canton, Ohio.
- 51,193. Tire. Term 14 years. Patented August 28, 1917. R. F. America, Philadelphia, Pa.

- 51,230. Tire tread. Term 7 years. Patented September 4, 1917. C. A. Goetze, Minneapolis, Minn.



51,072 51,184 51,193 51,230 51,231

- 51,231. Tire tread. Term 7 years. Patented September 4, 1917. C. A. Goetze, Minneapolis, Minn.

RUBBER EAR CUSHIONS FOR THE NAVY.

RUBBER ear cushions are used on telephone head sets and voice tubes for fire control installations in the United States Navy. The following specifications covering the construction, materials and tests, with a diagram showing the dimensions of the ear cushion, are issued by the Navy Department, Washington, D. C.

GENERAL INSTRUCTIONS.

General specifications for rubber material issued by the Navy Department shall form part of these specifications.

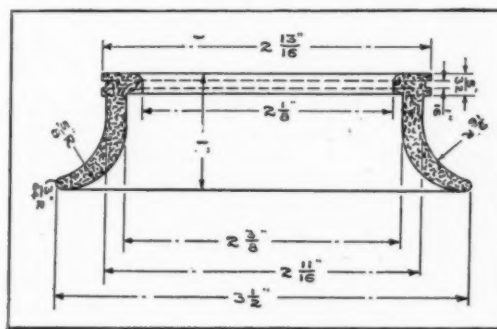
CONSTRUCTION.

Ear cushions shall be molded with a smooth finish and shall be of dimensions and form as shown on illustration incorporated in and forming a part of these specifications.

MATERIAL.

The ear cushions shall be properly vulcanized and be made from and have all the characteristics of a compound containing not less than 45 per cent of washed and dried fine Para rubber, not more than 3.5 per cent of sulphur, with the remainder suit-

DIAGRAM.



RUBBER EAR CUSHION.

able, dry, inorganic, mineral fillers. The mineral fillers may contain barytes, but shall be practically free from sulphur in other forms and from any substance likely to have a deleterious effect on the rubber compound. The sulphur in barytes will not be included in the allowable sulphur content.

TESTS.

The contractor shall furnish press-cured test pieces, guaranteed to be the same as the cushions in all respects, which must sustain the following tests:

Test pieces.—The test pieces shall be cut by a die measuring ¼ inch at the constricted part.

Test.—When the test piece is stretched 2 to 11 inches the permanent elongation when measured shall not exceed 20 per cent. The tensile strength shall be at least 2,200 pounds per square inch. It shall have an elongation at the breaking point of at least 2 to 12 inches.

PURPOSE.

For use on head sets for telephone and voice tubes.

Review of the Crude Rubber Market.

Copyright 1917.

NEW YORK.

EXTREME dullness amounting to almost stagnation has characterized the crude rubber market during the past month and values show but little change. The holiday dullness early in the month was followed by an upward movement in plantations due to London advances. However, the manufacturers failed to exhibit any real buying interest and the market declined to prices ruling around September 1. The other grades remained featureless and unchanged while extreme dullness dominated the entire market until the end of the month.

It is interesting to note that recently the New York prices have failed to respond so promptly as before to London market fluctuations. The cost of bringing rubber from London is 5 or 6 cents a pound higher than the New York market and the tendency to base New York prices on Eastern quotations is becoming more pronounced.

Brazilian sorts have received small attention from buyers who are not interested in Upriver fine at 68 cents and offer 66 to 67 cents.

Very little has been done in Africans during the past month and prices are unchanged. Rio Nunez ball is very scarce.

Centrals, manicobas, guayule, balata and East Indian sorts all reflect the dull and featureless conditions that have prevailed in the crude rubber market for the past month.

During August, 1917, there were 17,250 tons of crude rubber imported into the United States of which 15,160 tons were plantation rubber. For the same month in 1916, 6,250 tons were imported of which 5,245 tons were plantation rubber. The imports of Brazilian sorts for August of this year were 1,758 tons, compared with 660 tons a year ago.

LONDON.

There was a fair business done early in September with standard crepe and smoked sheet, quoted 32½d. and 30¾d., respectively. Supported by a strong market, prices continued to advance and on September 25 standard crepe sold for 33¾d. and smoked sheet, 31¾d. That the market of the past month has been of a highly speculative nature is conceded in some quarters. The accumulation of stocks in the East and the increasing shipping difficulties are reflected in a falling off of arrivals that may result in an actual shortage of stocks in this market.

London and Liverpool imports for July were 6,717 tons, value £1,916,112, compared with 7,390 tons, value £2,414,772 for June. Re-exports for July were 3,368 tons, value £1,126,552, compared with 4,750 tons, value £1,667,720 for June.

SINGAPORE.

Around the first of the month there was a large demand for the better grades at firm prices. The activity subsided somewhat as the month progressed; however a fair business was done at advanced prices. The market continued firm until the end of the month. At the auctions held August 31, September 8, 14 and 21 the average prices realized were, First latex crepe, 53.76 cents, compared with 53.8 cents last month; Smoked sheet ribbed, 52.7 cents, compared with 53.88 cents a month ago. The total amount sold was 2,751 tons against 2,335 this last month.

NEW YORK SPOT QUOTATIONS.

PLANTATION PARAS—	Oct. 1, 1916.	Sept. 1, 1917.	Sept. 26, 1917.
First-latex crepe	56½@	66½@	67½@
Hevea first crepe			
Amber crepe No. 1, gristly blanket	54½@	65 @	62 @
Amber crepe No. 2	53½@	64 @	61 @
Amber crepe No. 3	@	63 @	60 @

Amber crepe No. 4	@	62 @	59 @
Brown crepe, thick clean	52 @	62 @	59 @
Brown crepe, thin clean	@	61 @	59 @
Brown crepe, thin specky	@	59 @	55 @ 56
Brown crepe, rolled	@	48 @	46½@
Smoked sheet, ribbed standard quality	56 @	67 @	65½@ 66
Hevea ribbed smoked sheets			
Smoked sheet, plain standard quality	@	64 @ 64½	64 @ 64½
Hevea plain or smooth smoked sheets			
Unsmoked sheet, standard quality	@	62 @ 62½	61 @ 62
Hevea unsmoked sheets			
Colombo scrap, No. 1	@	49 @ 49½	47½@
Colombo scrap, No. 2	@	45 @	46½@

BRAZILIAN PARAS—

Upriver fine	71½@	68 @ 69	68 @
Upriver medium	@	63 @	62 @
Upriver coarse	42½@	48½@	46½@ 47
Upriver weak fine	@	59 @	58 @
Upriver caucho ball	42½@	42½@	41 @
Islands fine	60 @	61 @	57 @
Islands medium	@	58 @	51 @
Islands coarse	28 @	30 @	29½@
Cameta	33 @	32½@	30 @
Lower caucho ball	36 @	39 @ 40	38 @
Peruvian fine	@	66 @	63 @ 64
Tapajor fine	@	66 @	65 @ 66
Tapajor caucho ball	@	39½@	39 @

AFRICANS—

Accra flake	35 @	@	28 @
Niger flake	35 @	@	28 @
Benguela, extra seconds, 28%	38 @	39 @	27½@
Benguela, No. 2, 32½%	35 @	37½@	34 @
Congo prime, black upper	@	56 @	56 @
Congo prime, red upper	@	53 @	52 @
Rio Nunez ball	@	64 @ 66	65 @
Rio Nunez sheets and strings	@	64 @ 66	65 @
Conakry niggers	@	@	64 @
Massai sheets and strings	@	@	64 @

CENTRALS—

Central scrap	@	42 @ 43	39 @ 40
Central scrap and strip	@	41 @ 42	34 @ 36
Central wet sheet	@	31 @	27 @ 28
Corinto	39 @	43 @	41 @
Esmeralda sausage	39 @	43 @	46 @
Guayule	32 @ 33	36 @	32 @

MANICOBAS—

Ceara negro heads	@	44 @ 48	46 @
Ceara scrap	@	27 @ 28	28 @
Manicoba special	42½@	45 @	39 @
Manicoba extra	42½@	45 @	35 @
Manicoba regular	@	37½@	31 @ 32
Mangabeira thin sheet	37½@	39 @	37½@ 38
Mangabeira thick sheet	@	35 @ 36	32 @

ITALATA—

Balata block	50 @	58 @ 64	67 @ 68
Surinam sheet	79 @	85 @ 92	77 @

EAST INDIAN—

Assam crepe	38 @	63 @	60 @ 61
Assam onions	@	61 @	56 @
Penang block scrap	@	41 @	38 @ 39
Pontianak pressed	6½@	18 @	19½@ 20
Bandjermassin	3 @	11 @	12 @
Gutta Siak	17 @	19½@	20 @
Gutta percha, red Macassar	2.50@	2.30@	2.00@

* Rubber Association of America nomenclature.

THE MARKET FOR COMMERCIAL PAPER.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York), advises as follows:

"During September the market for commercial paper has continued just about the same as in July and August, the demand being irregular and rather light, the best rubber names going at 5½@5¾ per cent, and those not so well known 6@6½ per cent."

MARKET CABLE SERVICE FROM LONDON.

The following market report has been cabled from Alden's Successors, Limited, London:

	Standard Crêpe.	Ribbed Smoked Sheets.	Market.
August 27.....	31½d.	29¼d.	Firm
September 3.....	32½d.	30¼d.	Firmer
September 10.....	34d.	32d.	Firm
September 17.....	34¼d.	32½d.	Firm
September 25.....	33¾d.	31¾d.	Easier

MARKET CABLE SERVICE FROM SINGAPORE.

The following reports of the weekly auctions held at Singapore have been cabled by The Waterhouse Co., Limited:

Date.	Crêpe. Price per lb.	Smoked Sheet. Price per lb.	Tons Sold.	Market.
August 31.....	cents 52.70	51.42	610	There is a large demand for better grades.
September 8.....	53.12	52.28	603	Steady and a fair business doing.
September 14.....	53.55	53.12	742	Firm, with an upward tendency.
September 21.....	55.68	53.98	796	Firm at the advance.

WEEKLY RUBBER REPORT.

GUTHRIE & CO., LIMITED, Singapore, report [August 16, 1917]:

The weekly rubber auction held yesterday and today saw a further decline in prices averaging about \$3 per picul. The highest paid for fine pale crêpe was \$122 and for ribbed smoked sheet \$123 per picul, being a drop on the week of \$4 for crêpe and \$3 for sheet. Plain sheet, smoked and unsmoked, was in small supply, and although the top prices, at \$116 and \$112, are comparatively high, they cannot be considered representative, as only a very few lots found buyers. Of the lower grades clean dark crêpe was in most demand, but last week's prices were barely maintained. Barky crêpes and scraps met with only a moderate inquiry, and considerable quantities had to be bought in. Of 875 tons cataloged, 408 tons changed hands.

The following was the course of values:

	In Singapore per Picul.*	Sterling Equivalent per Pound in London.	Equivalent per Pound in Cents.
Sheet, fine ribbed smoked.....	\$118@123	2/ 5¼ @ 2/6½	50.15@52.28
Sheet, good ribbed smoked.....	109@117	2/ 3¾ @ 2/5½	46.33@49.73
Sheet, plain smoked.....	107@116	2/ 3 @ 2/4¾	45.48@49.30
Sheet, ribbed unsmoked.....	114@...	2/ 4½ @...	48.45@...
Sheet, plain unsmoked.....	90@112	1/11¼ @ 2/4	38.25@47.60
Crêpe, fine pale.....	120@122	2/ 5¼ @ 2/6½	51.00@51.85
Crêpe, good pale.....	115@119	2/ 4¾ @ 2/5½	48.88@50.58
Crêpe, fine brown.....	108@114	2/ 3¾ @ 2/4¾	45.90@48.45
Crêpe, good brown.....	90@107	1/11¼ @ 2/3	38.25@45.48
Crêpe, dark brown.....	80@ 95	1/ 9¼ @ 2/0¾	34.00@40.38
Crêpe, bark.....	60@ 83	1/ 5¼ @ 1/9¾	25.50@35.28
Scrap, virgin and pressed.....	50@ 78	1/ 3 @ 1/8¾	21.25@33.15
Scrap, loose.....	60@ 74	1/ 5¼ @ 1/8	25.50@31.45

* Picul = 133½ pounds.

Quoted in S. S. dollars = 2/4 [56.7 cents].

HIGHEST PRICES REALIZED AT SINGAPORE AUCTIONS.

	1914.	1915.	1916.	1st Half Year 1917.
Smoked sheet, fine ribbed... per picul	\$141	\$204	\$203	\$175
good ribbed.....	135	188	194	167
fine plain.....	132	185	193	148
good plain.....	128	183	189	139
Unsmoked, fine ribbed.....	129	182	190	145
good ribbed.....	129	178	167	129
fine plain.....	130	180	190	137
good plain.....	127	170	186	130
Crêpe, fine pale thin.....	146	209	210	174
good pale thin.....	139	198	205	170
good pale blanket.....	195	197	170	170
good brown blanket.....	183	192	151	151
fine brown.....	133	190	198	154
good brown.....	124	179	189	141
good dark.....	122	171	179	130
barky.....	111	157	171	124
Scrap, virgin and pressed.....	108	120	124	115
loose.....	97	127	114	101

TOTAL QUANTITIES SOLD (tons).

1914.	1915.	1916.	1st Half Year 1917.
2,666	7,332	16,659	11,983

A picul equals 133 pounds. To arrive at the price per pound in United States currency, multiply above values by 0.425.

IMPORTS AND EXPORTS OF RUBBER AND GUTTA AT SINGAPORE.

IMPORTS.

July 1-19, 1917.

From—	Para Rubber.	Para Rubber for Treatment.	Borneo Rubber.	Gutta Percha.	Gutta Jelutong.
Malay Peninsula—					
Port Swettenham..... lbs.	1,879,466	44,800			
Malacca.....	1,629,600	490,733			
Teluk Anson.....	1,068,733				
Muar.....	697,466				
Penang.....	270,666	795,600			
Port Dickson.....	200,533				
Kelantan.....	113,333			800	
Kuantan.....	36,533			133	
Rengat.....	22,533	7,733			
S. Pandjang.....	2,330				
Tringgannu.....	666				
Totals.....	5,921,829	1,338,866		933	
Borneo—					
Sarawak.....	106,933	38,133	1,200	12,800	520,533
Bandjermassin.....	61,600	27,866	5,333		16,000
Pontianak.....	60,400	4,000	4,933	28,000	59,200
Labuan.....	43,866	9,066	996	4,266	155,066
Sambas.....	43,866				
Sandakan.....	42,400		133	266	
Kudat.....	37,600		266		
Jesselton.....	32,933	75,200		133	
Sibu.....	24,400		133	2,800	120,266
Passir.....	18,800				
Singawang.....	8,533				
Sampit.....	1,333			1,333	159,200
Samarinda.....				2,800	
Totals.....	482,664	154,265	12,994	52,398	1,030,265
Sumatra—					
Djambi.....	140,800				
Deli.....	25,066	13,466			
Indragiri.....	9,200				
Muntok.....	1,466				
Bengkalis.....	1,333				
Palembang.....	1,066				
Asahan.....	1,066				
Belawan.....	67,333				
Totals.....	179,997	80,799			
Java—					
Batavia.....	47,066				
Sourabaya.....	40,400				
Samarang.....	1,600				
Total.....	89,066				
Burma—					
Mergui.....	10,000				
Rangoon.....	4,933				
Total.....	14,933				
Siam—					
Patani.....	433				
Other ports.....	164,533	12,133	2,266	13,600	89,733
Grand Totals.....	6,853,455	1,586,063	15,260	66,931	1,119,998

EXPORTS.

July 1-19, 1917.

To—	Para Rubber.	Para Rubber Trans-shipped.	Borneo Rubber.	Gutta Percha.	Gutta Jelutong.
NORTH AMERICA:					
United States—					
New York.....	2,263,466	13,466		22,400	
Akron.....	1,896,000	2,266			
Seattle.....	245,666	115,333			
Boston.....	127,866				
San Francisco.....	108,533	40,800			
Canada—					
Vancouver.....	643,733				
Totals.....	5,285,264	171,865		22,400	
EUROPE:					
United Kingdom—					
England—					
Liverpool.....	455,866	456,066		55,733	
London.....	150,800	371,333		11,466	
France (Marseilles).....	162,400				
Totals.....	769,066	827,399		67,199	
Grand Totals.....	6,054,330	999,264		89,599	

PLANTATION RUBBER FROM THE FAR EAST.

TOTAL EXPORTS FROM MALAYA.

(From January 1, 1917, to dates named, excluding all foreign transshipments. Reported by Barlow & Co., Singapore.)

To—	From				Totals.
	Singapore, June 30, 1917.	Malacca, June 30, 1917.	Penang, June 30, 1917.	Port Swettenham, Aug. 21, 1917.	
United Kingdom, lbs.	24,844,780	2,201,114	12,810,867	18,807,976	58,664,737
The Continent	8,536,637		47,067		8,583,704
Japan	1,869,869				1,869,869
Ceylon	152,334		224,155	538,064	914,553
U. S. A. and Canada	66,560,632		6,240,890	553,264	73,354,786
Australia	289,045				289,045
China (Hongkong)				47,052	47,052
	102,253,297	2,201,114	19,322,979	19,946,356	143,723,746
Same period, 1916	62,176,305	3,442,134	15,863,767	18,629,741	100,111,947
Same period, 1915	34,367,101	4,329,778	12,621,996	18,790,723	70,109,598
Same period, 1914	18,511,130	2,548,819	10,407,734	17,513,177	48,980,860

EXPORTS OF CEYLON GROWN RUBBER.

(From January 1 to July 9, 1917. Compiled by the Ceylon Chamber of Commerce.)

To—	1917	1916.
United Kingdom	15,293,817	9,986,047
France	1,591,595	854,320
Italy	387,535	
Russia	229,673	248,874
Western Australia		56
South Australia	27	
Victoria	198,353	380,836
New South Wales	84,829	108,339
United States	11,238,680	13,384,570
Canada and Newfoundland	239,694	2,240
India	131	679
Straits Settlements	28	
China	29	
Japan	40,288	155,189

Totals 29,304,679 25,121,149
(Same period 1915, 20,647,982 pounds; same period 1914, 16,596,172 pounds.) The export figures of rubber, given in the above table for 1914, include the imports reexported. (These amount to 2,084,425—1,711,059 pounds from the Straits, and 361,742 pounds from India.) To arrive at the total quantity of Ceylon rubber exported for that year deduct these imports from the total exports. The figures for 1916 and 1917 are for Ceylon rubber only.

EXPORTS OF PARA RUBBER FROM PENANG.

JULY 5-19, 1917.

To—	POUNDS.	To—	POUNDS.
UNITED STATES:		EUROPE:	
Seattle	824,320	England—	
Akron	452,480	London	100,800
New York	367,360	Liverpool	266,360
Total	1,644,160	Total	367,360
		CANADA:	
		Toronto	11,200

CRUDE RUBBER ARRIVALS AT THE PORT OF NEW YORK.

The following statistics are not complete, due to Government orders prohibiting access to the records.

[The Figures Indicate Weight in Pounds.]

PARAS.

Fine. Medium. Coarse. Caucho. Cameta. Totals.

AUGUST 11.—By the steamer *Tela* from Manaos:

Aldens' Successors, Ltd.	500	600	1,000	...	2,100
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AUGUST 20.—By the steamer *Tampico* from Manaos:

Aldens' Successors, Ltd.	9,700	400	800	...	10,900
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Meyer & Brown	14,300	2,100	19,400	22,600	59,400
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AUGUST 23.—By the steamer *Wagland* from Pará and Iquitos:

Aldens' Successors, Ltd.	5,200	1,100	3,000	...	9,300
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Meyer & Brown	13,700	5,700	9,000	215,300	425,300
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General Rubber Co.	123,200	...	123,200
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AUGUST 31.—By the steamer *Allianca* from Mollendo:

Müller, Schall & Co.	15,604	1,501	17,105
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AUGUST 31.—By the steamer *Tela* from Pará and Manaos:

General Rubber Co.	56,000	13,440	28,120	38,080	135,640
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Arnold & Zeiss	2,000	300	22,500	6,000	30,800
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H. A. Astlett & Co.	31,360	...	3,360	42,000	76,720
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Meyer & Brown	16,300	4,300	5,100	1,200	36,100
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Henderson & Korn	...	7,500	7,500
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SEPTEMBER 8.—By the steamer *Talisman* from Pará:

Hagemeyer & Brunn	28,800	4,000	11,200	28,000	72,000
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H. A. Astlett & Co.	23,520	1,120	7,840	49,280	81,760
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Arnold & Zeiss	12,700	700	6,800	...	23,400
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General Rubber Co.	22,400	22,400
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Meyer & Brown	20,300	10,300	35,400	4,000	70,000
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Henderson & Korn	12,500	1,200	3,900	...	17,600
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SEPTEMBER 11.—By the steamer *Minas Geraes* from Para and Manaos:

Meyer & Brown	...	3,800	3,800
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General Rubber Co.	60,480	60,480
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Arnold & Zeiss	72,800	5,900	29,500	23,600	138,700
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Hagemeyer & Brunn	12,600	6,000	3,800	15,680	38,180
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Müller, Schall & Co.	11,638*	...	7,569	29,425	56,351
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H. A. Astlett & Co.	31,360	1,680	14,560	7,840	103,600
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Henderson & Korn	72,300	450	22,000	2,100	96,850
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SEPTEMBER 14.—By the steamer *Sergipe* from Pará and Manaos:

Müller, Schall & Co.	23,594	719	5,793	11,860	47,947
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Hagemeyer & Brunn	14,200	...	14,200
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Arnold & Zeiss	64,600	2,500	4,500	19,000	94,500
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General Rubber Co.	367,360	...	38,080	91,840	497,280
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Aldens' Successors, Ltd.	4,400	4,400
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H. A. Astlett & Co.	98,560	5,600	3,360	23,520	131,040
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Henderson & Korn	12,200	960	150	...	13,210
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SEPTEMBER 20.—By the steamer *Ancon* from Mollendo:

Müller, Schall & Co.	19,722	...	619	...	20,341
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Henderson & Korn	6,500	...	1,450	...	7,950
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SEPTEMBER 22.—By the steamer *Guajara* from Manaos:

General Rubber Co.	78,400	...	4,480	...	82,880
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Arnold & Zeiss	111,500	9,800	19,900	19,700	174,700
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H. A. Astlett & Co.	154,560	6,160	38,960	50,960	305,640
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Henderson & Korn	81,000	2,800	18,200	12,400	114,400
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* Bolivian. † Various. § Mollendo.

PLANTATIONS.
TO NEW YORK.

	POUNDS.			POUNDS.	
	POUNDS.			POUNDS.	
AUGUST 19.—By the <i>Rembrandt</i> —East:			SEPTEMBER 12.—By the <i>Eurymedon</i> —Colombo:		
Arnold & Zeiss	115,000		J. T. Johnstone & Co.	...	517,856
AUGUST 23.—By the <i>Wagland</i> —Ceara:			Aldens' Successors Ltd.	...	100,000
Hagemeyer Trading Co.	5,040		General Rubber Co.	...	44,800
AUGUST 24.—By the <i>Griqua</i> —Colombo:			Hagemeyer Trading Co.	...	26,880
Hagemeyer Trading Co.	6,720		Meyer & Brown	...	87,400
Rubber Trading Co.	11,200		Arnold & Zeiss	...	46,000
Henderson & Korn	30,600		Fred Stern & Co.	...	150,080
AUGUST 27.—By the <i>Nore</i> —East:			Rubber Trading Co.	...	78,400
Arnold & Zeiss	11,200		Henderson & Korn	...	125,500
AUGUST 28.—By the <i>Korimata</i> —Batavia:			SEPTEMBER 15.—By the <i>City of Agra</i> —Colombo:		
J. T. Johnstone & Co.	139,086		J. T. Johnstone & Co.	...	185,469
AUGUST 28.—By the <i>Banacan</i> —Batavia:			Aldens' Successors Ltd.	...	11,200
J. T. Johnstone & Co.	9,561		Arnold & Zeiss	...	52,000
AUGUST 29.—By the <i>Tauris</i> —Singapore:			Rubber Trading Co.	...	13,440
J. T. Johnstone & Co.	58,976		Henderson & Korn	...	15,000
Fred Stern & Co.	185,920		SEPTEMBER 15.—By the <i>Aspinett</i> —Colombo:		
Rubber Trading Co.	145,600		Meyer & Brown	...	135,000
			Aldens' Successors Ltd.	...	11,200
			Arnold & Zeiss	...	11,200
			Fred Stern & Co.	...	11,200
			Rubber Trading Co.	...	13,440
			Henderson & Korn	...	45,200
			SEPTEMBER 21.—By the <i>Roti</i> —Soerabaya:		
			Meyer & Brown	...	35,900
			Arnold & Zeiss	...	140,000
			Rubber Trading Co.	...	33,600

[No dates given.]

	POUNDS.
By the <i>Columbia</i> =Penang:	
Meyer & Brown.....	45,000
By the <i>Eurydomes</i> =London:	
Meyer & Brown.....	22,400
By the <i>Celtic</i> =London:	
Rubber Trading Co.....	22,400
By the <i>Eurybates</i> =London:	
Fred. Stern & Co.....	49,280
By the <i>Lake Michigan</i> =London:	
Meyer & Brown.....	11,500
By the <i>Tjimanock</i> =Soerabaya:	
Meyer & Brown.....	4,400
By the <i>Ionian</i> =London:	
Fred Stern & Co.....	31,360
By the <i>Lycaon</i> =London:	
Rubber Trading Co.....	147,840
By the <i>Princess Juliana</i> =Soerabaya:	
Meyer & Brown.....	66,100
Arnold & Zeiss.....	128,000
By the <i>Euryalus</i> =East:	
Arnold & Zeiss.....	304,000
By the <i>City of Manchester</i> =Far East:	
Fred Stern & Co.....	8,960
By the <i>Skule</i> =Colombo:	
Fred Stern & Co.....	85,120
By the <i>Madison</i> =Batavia:	
Hagemeyer Trading Co.....	15,680

QUAYULE.

SEPTEMBER 4.—By the <i>Murus</i> =Galveston:	
Continental Rubber Co. of New York..	102,000

BALATA.

SEPTEMBER 6.—By the <i>Nickerie</i> =Paramaribo:	
Müller, Schall & Co.....	12,550

AFRICANS.

By the <i>St. Paul</i> =England:	
Fred Stern & Co.....	13,440
By the <i>Adriatic</i> =England:	
Fred Stern & Co.....	24,640

CRUDE RUBBER ARRIVALS AT SEATTLE.

[Figured 135 pounds net to the case.]

PLANTATIONS.

TO AKRON, OHIO.

AUGUST 29.—By the <i>Tamba Maru</i> =Yokohama:	
H. B. M. Consul General.....	9,315

SEPTEMBER 1.—By the <i>Keishin Maru</i> =Singapore:	
---	--

The Firestone Tire & Rubber Co.	207,225
The Goodyear Tire & Rubber Co.	258,390
J. T. Johnstone & Co.....	2,430
Shortshipped.	468,045
The Goodyear Tire & Rubber Co.....	14,040

SEPTEMBER 6.—By the <i>Panama Maru</i> =Yokohama:	
---	--

The Goodyear Tire & Rubber Co.	158,355
The B. F. Goodrich Co.....	235,710
J. T. Johnstone & Co.....	6,885
	400,950

SEPTEMBER 14.—By the <i>Manila Maru</i> =Yokohama:	
--	--

The Goodyear Tire & Rubber Co.	90,045
The B. F. Goodrich Co.....	194,265
	284,310

SEPTEMBER 1.—By the <i>Keishin Maru</i> =Singapore:	
---	--

L. Littlejohn & Co.....	23,895
J. T. Johnstone & Co.....	4,995
	28,890

TO SEATTLE, WASH.

SEPTEMBER 1.—By the <i>Keishin Maru</i> =Singapore:	
---	--

L. Littlejohn & Co.....	64,800
The Goodyear Tire & Rubber Co.	32,400
Robinson & Co.....	17,280
Aldens' Successors, Ltd.....	13,500
The B. F. Goodrich Co.....	1,050,165
Shortshipped.	1,178,145
The Goodyear Tire & Rubber Co.....	18,225

SEPTEMBER 12.—By the <i>Thordius</i> =Calcutta:	
---	--

(Arrived at Vancouver.)	
The Goodyear Tire & Rubber Co.....	130,005

SEPTEMBER 14.—By the <i>Manila Maru</i> =Yokohama:	
--	--

L. Littlejohn & Co.....	17,550
-------------------------	--------

POUNDS.

SEPTEMBER 17.—By the <i>Meiten Maru</i> =Kobe:	
--	--

I. T. Steeb & Co.....	56,565
Mitsui & Co., Ltd.....	2,025
	58,590

TO NEW YORK, N. Y.

SEPTEMBER 1.—By the <i>Keishin Maru</i> =Singapore:	
---	--

Henderson & Korn.....	195,480
Robinson & Co.....	46,710
Hadden & Co.....	91,125
W. R. Grace & Co.....	33,750
Winter & Son.....	33,885
Fred. Stern & Co.....	4,050
L. Littlejohn & Co.....	8,100
Arthur Meyer & Co.....	3,510
Edward Maurer & Co.....	48,465
	465,075

SEPTEMBER 2.—By the <i>Yokohama Maru</i> =Yokohama:	
---	--

Henderson & Korn.....	110,160
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SEPTEMBER 6.—By the <i>Panama Maru</i> =Yokohama:	
---	--

Arnold & Zeiss.....	22,410
Aldens' Successors, Ltd.....	3,510
W. R. Grace & Co.....	1,755
I. T. Johnstone & Co.....	13,905
Fred. Stern & Co.....	11,745
Rubber Trading Co.....	1,620
L. Littlejohn & Co.....	6,210
Arthur Meyer & Co.....	5,265
Charles T. Wilson Co.....	1,485
	67,905

SEPTEMBER 14.—By the <i>Manila Maru</i> =Yokohama:	
--	--

United States Rubber Co.....	216,000
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TO TORONTO, CANADA.

SEPTEMBER 6.—By the <i>Panama Maru</i> =Yokohama:	
---	--

Meyer & Brown.....	3,510
Dunlop Tire & Rubber Co.....	10,800
	14,310

TO VANCOUVER.

SEPTEMBER 12.—By the <i>Thordius</i> =Calcutta:	
---	--

(Arrived at Vancouver.)	
Dunlop Rubber Co.....	27,540
L. Littlejohn & Co.....	139,050
Fred. Stern & Co.....	142,965
The Goodyear Tire & Rubber Co.	86,265
Arthur Meyer & Co.....	18,225
The United States Rubber Co.....	540,000
	954,045

PONTIANAK.

TO AKRON, OHIO.

SEPTEMBER 1.—By the <i>Keishin Maru</i> =Singapore:	
---	--

The United Malaysian Rubber Co. (Gutta untreated)	135,000
---	---------

TO NEW YORK, N. Y.

SEPTEMBER 1.—By the <i>Keishin Maru</i> =Singapore:	
---	--

The United Malaysian Rubber Co. (Gutta untreated)	176,850
The United Malaysian Rubber Co. (Gutta Katan)	135
	176,985

CRUDE RUBBER ARRIVALS AT SAN FRANCISCO.

[Figured 135 pounds net to the case.]

PLANTATION.

AUGUST 24.—By the <i>Siberia Maru</i> =Hongkong:	
--	--

The Goodyear Tire & Rubber Co.	31,185
The B. F. Goodrich Co.....	200,205
Arthur Meyer & Co.....	3,105
Robinson & Co.....	37,800
The United States Rubber Co.	164,700
Arnold & Zeiss.....	43,335
	480,330

AUGUST 27.—By the <i>Roggeveen</i> =Batavia:	
--	--

I. T. Johnstone & Co.....	95,985
H. B. M. Consul General.....	168,345
General Rubber Co.....	839,160
Joosten & Janssens.....	337,500
Arnold & Zeiss.....	239,625
Robinson & Co.....	72,225
W. R. Grace & Co.....	5,265
Meyer & Brown.....	44,010
G. Amsinck & Co.....	335,080
Edward Maurer & Co.....	99,765
Eugen Boissevain & Co.....	29,835
W. Hammesfahr & Co.....	35,370
L. Littlejohn & Co.....	92,610
Henderson & Korn.....	10,530
The Goodyear Tire & Rubber Co.	238,005
The B. F. Goodrich Co.....	22,545
The Firestone Tire & Rubber Co.	344,925
	3,010,770

AUGUST 31.—By the <i>Goentoe</i> =Soerabaya:	
--	--

J. D. Spreckles Co.....	70,875
Edgar & Co.....	10,260
H. B. M. Consul General.....	22,950
S. L. Jones.....	50,085
H. W. Peabody & Co.....	14,850
Savage Tire Co.....	7,560
The Goodyear Tire & Rubber Co.	22,275

POUNDS.

The Guaranty Trust Co.....	14,310
Hanemeyer, Ltd.....	37,935
L. Littlejohn & Co.....	19,845
J. T. Johnstone.....	95,310
William H. Stiles.....	33,210
Edward Maurer & Co., Inc.....	32,130
Manhattan Rubber Mfg. Co.....	27,000
	458,595

SEPTEMBER 1.—By the <i>Kwanto</i> =Yokohama:	
--	--

J. T. Steeb & Co.....	42,120
Mitsui & Co., Ltd.....	40,635
	82,755

SEPTEMBER 6.—By the <i>Tenyo Maru</i> =Singapore:	
---	--

H. B. M. Consul General.....	80,730
L. Littlejohn & Co.....	91,260
The Goodyear Tire & Rubber Co.	7,560
Various.....	35,100
	214,650

SEPTEMBER 9.—By the <i>Ventura</i> =Singapore:	
--	--

Oceanic Steamship Co.....	15,930
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SEPTEMBER 11.—By the <i>Rindgani</i> =Batavia:	
--	--

Meyer & Brown.....	59,670
G. Amsinck & Co.....	60,210
W. R. Grace & Co.....	9,450
J. T. Johnstone & Co.....	13,230
Henderson & Korn.....	5,265
Robinson & Co.....	17,550
L. Littlejohn & Co.....	35,100
Mitsui & Co., Ltd.....	4,185
London & Brazil Bank.....	40,095
Arnold & Zeiss.....	21,060
Far East Import Co.....	27,000
The Goodyear Tire & Rubber Co.	4,050
City National Bank of New York	26,325
	323,190

PONTIANAK.

AUGUST 31.—By the <i>Goentoe</i> =Soerabaya:	
--	--

British Bank of South America (Gutta percha)	87,480
--	--------

OTHER PACIFIC COAST ARRIVALS.

AUGUST 15.—By the <i>Bintong</i> =East:	
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Arnold & Zeiss.....	44,000
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AUGUST 24.—By the <i>Siberia Maru</i> =Yokohama:	
--	--

Arnold & Zeiss.....	45,000
Meyer & Brown.....	11,200

AUGUST 28.—By the <i>Roggeveen</i> =Batavia:	
--	--

Arnold & Zeiss.....	320,000
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AUGUST 31.—By the <i>Goentoe</i> =Batavia:	
--	--

Arnold & Zeiss.....	44,000
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SEPTEMBER 1.—By the <i>Kawachi Maru</i> =Singapore:	
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Meyer & Brown.....	124,400
Aldens' Successors Ltd.....	13,400
Rubber Trading Co.....	38,080
Henderson & Korn.....	16,000

SEPTEMBER 4.—By the <i>Keishin Maru</i> =Yokohama:	
--	--

Henderson & Korn.....	165,200
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SEPTEMBER 6.—By the <i>Panama Maru</i> =Singapore:	
--	--

Rubber Trading Co.....	2,240
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SEPTEMBER 9.—By the <i>Yokohama Maru</i> =Yokohama:	
---	--

Henderson & Korn.....	164,800
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SEPTEMBER 11.—By the <i>Rindgani</i> =East:	
---	--

Arnold & Zeiss.....	22,900
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SEPTEMBER 15.—By the <i>Tjkenbanj</i> =Batavia:	
---	--

Arnold & Zeiss.....	225,000
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SEPTEMBER 17.—By the <i>Thordius</i> =Far East:	
---	--

Fred Stern & Co.....	255,360
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SEPTEMBER 21.—By the <i>Empress of Russia</i> Colombo:	
--	--

Fred Stern & Co.....	107,520
Henderson & Korn.....	591,000

SEPTEMBER 24.—By the <i>Louise Nielsen</i> =East:	
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Henderson & Korn.....	396,000
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By the <i>Burma Maru</i> =Singapore:	
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Rubber Trading Co.....	33,600
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By the <i>Nippon Maru</i> =Singapore:	
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Rubber Trading Co.....	4,480
Henderson & Korn.....	74,500

By the <i>Shinsei Maru</i> =Singapore:	
--	--

Rubber Trading Co.....	13,440
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By the <i>Kamakura Maru</i> =Singapore:	
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Rubber Trading Co.....	22,400
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By the <i>Mexico Maru</i> =Penang:	
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Meyer & Brown.....	4,500
Fred Stern & Co.....	8,960

By the <i>Bankoku Maru</i> =Singapore:	
--	--

Meyer & Brown.....	56,000
Fred Stern & Co.....	26,880

By the <i>Benton Maru</i> =Penang:	
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Meyer & Brown.....	2,200
By the <i>Ceylon Maru</i> =Penang:	
Meyer & Brown.....	2,200

CUSTOM HOUSE STATISTICS.

PORT OF BOSTON, MASS.—JULY, 1917.

IMPORTS:	POUNDS.	VALUE.
India rubber	30,407	\$12,071
Rubber scrap	129,808	7,322
Manufactures of india rubber		3,736

Total \$23,129

EXPORTS:	POUNDS.	VALUE.
Rubber boots.....pairs	1,501	\$4,299
Rubber shoes.....pairs	15,967	8,008
Automobile tires		623
Other tires		19
All other manufactures of india rubber		3,115

Total \$16,064

PORT OF CHICAGO, ILLINOIS—JULY, 1917.

IMPORTS:	POUNDS.	VALUE.
Rubber scrap	232,305	\$17,111
Manufactures of india rubber		1,231

Total \$18,342

PORT OF CHICAGO, ILLINOIS—AUGUST, 1917.

IMPORTS:	POUNDS.	VALUE.
Rubber scrap	32,116	\$2,368
Manufactures of india rubber		11

Total \$2,279

PORT OF CLEVELAND, OHIO—AUGUST, 1917.

IMPORTS:	POUNDS.	VALUE.
India rubber	2,368,294	\$1,483,169
Rubber scrap	169	14

Totals 2,368,463 \$1,483,183

PORT OF GALVESTON, TEXAS—AUGUST, 1917.

None.

PORT OF THE DISTRICT OF MICHIGAN, MICH.—JULY, 1917.

IMPORTS:	POUNDS.	VALUE.
India rubber	336,000	\$215,040
Rubber scrap	30,000	1,250
Manufactures of india rubber		21,173

Total \$237,463

EXPORTS:	POUNDS.	VALUE.
Rubber scrap	4,877	\$473
India rubber boots.....pairs	1,244	3,549
India rubber shoes.....pairs	252	745
Automobile tires		\$1,413
Other rubber tires		162
Belting, hose, etc.		4,772
All other manufactures of india rubber		15,026

Total \$76,140

PORT OF NEW ORLEANS, LA.—AUGUST, 1917.

IMPORTS:	POUNDS.	VALUE.
India rubber	50,132	\$22,222

IMPORTS:	POUNDS.	VALUE.
India rubber	4,255,277	\$2,732,130
Gutta percha	106,378	10,054
Gutta jelutong (Pontianak)	1,043,160	46,380
Gutta Siak	271,452	31,660

Totals 5,676,267 \$2,820,224

STATISTICS OF CRUDE AND MANUFACTURED RUBBER AT THE PORT OF NEW YORK.

IMPORTS.

July, 1917.

UNMANUFACTURED—	POUNDS.	VALUE.
India rubber—free:		
From—		
England	3,364,522	\$2,257,984
Canada	179,295	118,614
Costa Rica	14,764	8,424
Guatemala	8,775	1,697
Honduras	5,297	2,416
Nicaragua	33,552	16,464
Panama	7,995	2,251
Salvador	2,463	1,232

UNMANUFACTURED—

July, 1917.

UNMANUFACTURED—		POUNDS.	VALUE.
Mexico		22,804	9,687
British West Indies		9,063	6,959
Brazil		4,036,830	1,481,470
Chile		1,600	600
Colombia		144,776	61,403
Ecuador		44,595	21,722
Peru		132,532	64,467
Venezuela		212,634	98,159
British India		20,500	11,210
Straits Settlements		3,993,195	2,403,214
British East Indies		908,335	600,248
Dutch East Indies		1,354,481	876,279
Japan		8,960	4,504

Totals 14,506,968 \$8,049,094

Gutta percha—free:

From—		
Straits Settlements	148,666	\$23,072
Dutch East Indies	1,812	154

Totals 150,478 \$23,226

Gutta jelutong—dutiable:

From—		
Straits Settlements	397,388	\$25,871
Dutch East Indies.....	501,692	28,314

Totals 899,080 \$54,185

Balata—free:

From—		
Panama	64,002	\$28,643
British West Indies.....	3,566	2,781
Colombia	47,566	20,957
Dutch Guiana	118,992	88,532
Venezuela	33,673	16,567

Totals 267,799 \$157,480

Rubber scrap—free:

From—		
France	24,420	\$4,584
Norway	66,783	6,166
England	767,269	58,313
Scotland	20,160	1,411
Panama	4,318	341
Jamaica	11,760	929
British West Indies.....	1,800	90
Cuba	55,165	3,928
Argentina	485,100	33,957
Brazil	221,615	9,615
Australia	22,400	1,040

Totals 1,680,790 \$120,374

Guayule—free:

From—		
Colombia	4,100	\$1,886
Totals, unmanufactured	12,509,215	\$8,406,155

Totals, unmanufactured 17,509,215 \$8,406,155

MANUFACTURED—

India rubber—dutiable:

From—		
France	.....	\$478
Sweden	.....	2,252
England	.....	35,391
Scotland	.....	2,576
Canada	.....	4,647
Panama	.....	2
Straits Settlements	.....	7,087
Japan	.....	2,153

Total \$54,586

Gutta percha—dutiable:

From—	
Scotland	\$2,634

Total manufactured \$57,220

EXPORTS OF DOMESTIC MERCHANDISE.

July, 1917.

MANUFACTURED—	UNITED STATES	
	POUNDS.	VALUE.
Automobile tires:		
To—		
France	\$28,616
Italy	21,213
England	24,993
Cuba	52,937
Argentina	215,683
Brazil	22,682

MANUFACTURED—

July, 1917.

MANUFACTURED—		POUNDS.	VALUE.
Chile			30,769
Uruguay			11,389
New Zealand			20,820
British South Africa....			117,123
Other countries			141,807
Total			\$688,032
All other tires			\$165,882
Belting			159,319
Rubber boots.....pairs	18,903		57,515
Rubber shoes.....pairs	63,052		40,545
Druggists' sundries			17,609
Scrap rubber	20,986		2,381
Reclaimed rubber	12,765		1,781
Other rubber manufactures			344,268

Total, manufactured... \$1,477,332

EXPORTS OF FOREIGN MERCHANDISE.

July, 1917.

UNMANUFACTURED—		
	POUNDS.	VALUE.
India rubber	10,977	\$6,216
Rubber scrap	220	60
Totals	11,197	\$6,276

RUBBER STATISTICS FOR THE DOMINION OF CANADA.

The import and export figures by countries usually published in this table are withheld by the Canadian Government.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

June, 1917.

UNMANUFACTURED—free:		Pounds.	Value.
Rubber and gutta percha, crude caoutchouc or india rubber	691,573		\$457,184
Rubber, recovered	418,492		67,595
Hard rubber, in sheets and rods	18,281		12,428
Rubber substitute	53,868		4,907
Rubber, powdered, and rubber or gutta percha waste	314,099		21,902
Rubber thread, not covered	3,429		4,994
Chicle	12,807		23,333
Totals	1,512,549		\$592,343

MANUFACTURED—dutiable:

MANUFACTURED— <i>Antislip:</i>		Tariff.	Tariff.
	Value.	Value.	
Boots and shoes	\$15,554	\$6,649	
Belting	11,353		
Waterproof clothing	21,153	28,547	
Hose, lined with rubber....	8,931		
Mats and matting.....	892		
Packing	10,018	17	
Tires of rubber for all vehicles	420,518	3,607	
Rubber cement and all manu- factures of india rubber and gutta percha—N. O. P.	100,372	20,191	
Hard rubber, unfinished, in tubes for fountain pens..	1,052		
Webbing—over one inch wide	8,404		

EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.

June, 1917.

MANUFACTURED—	Produce of Canada.	Reexports of Foreign Goods.
	Value.	Value.
Beltling	\$1,716	.....
Hose	2,863	.....
Boots and shoes.	109,259	135
Waterproof clothing ..	42	21
Tires	15,812	2,208
Waste	100,706	.....
All other N. O. P.	11,500	422,374
Chicle, crude	217,812	.....
Totals	\$459,704	\$424,738

Official India Rubber Statistics for the United States.

For the Fiscal Years 1915-16-17 and June 1916-17

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

	June.				Twelve Months Ending June 30.					
	1916.		1917.		1915.		1916.		1917.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
UNMANUFACTURED—free:										
India rubber:										
From—										
Belgium					1,902,370	\$950,872				
France	31,616	\$23,453			685,699	284,862	509,675	\$312,144	616,772	\$300,052
Germany					739,105	358,931				
Portugal	5,363	2,347	401,320	\$121,344	4,130,624	1,374,526	2,773,656	1,094,841	3,719,703	1,439,498
United Kingdom	8,321,535	5,632,710	10,719,733	7,733,062	75,168,236	39,188,519	72,459,408	48,144,416	78,742,217	51,851,269
Central American States and British Honduras...	142,765	67,514	156,211	71,310	790,368	359,066	1,313,454	556,827	1,347,931	610,911
Mexico	185,202	90,602	124,799	53,490	1,827,912	706,350	3,261,507	1,262,291	1,488,636	611,209
Brazil	4,832,346	2,363,662	9,410,413	3,606,244	48,753,670	20,738,776	54,968,227	25,150,493	56,818,966	25,654,924
Other South America	548,577	278,677	163,379	76,934	4,708,390	2,008,790	6,265,387	2,896,713	6,250,806	2,882,099
British East Indies.....	16,170,761	10,164,836	14,641,556	8,996,709	27,898,683	14,051,598	125,532,067	75,092,942	136,404,168	76,986,051
Dutch East Indies.....			11,539,504	7,505,367					45,027,410	27,239,501
Other countries	47,053	37,355	907,371	512,717	5,463,371	3,007,979	692,176	494,123	2,957,102	1,753,160
Totals	30,285,218	\$18,661,156	48,064,286	\$28,677,177	172,068,428	\$83,030,269	267,775,557	\$155,044,790	333,373,711	\$189,328,674
Balata	165,498	\$64,830	361,371	\$193,795	2,472,224	\$963,384	2,544,405	\$996,102	3,287,445	\$1,649,452
Guayule gum	306,178	91,044	412,341	123,136	5,111,849	1,441,367	2,816,068	880,813	2,854,372	764,484
Gutta jelutong (Pontianak)	5,160,014	261,615	4,837,212	205,883*	14,851,264	731,995	27,858,335	1,322,262	23,376,389*	1,044,022*
Gutta percha	622,782	80,243	24,549	5,127	1,618,214	230,750	3,188,449	342,226	2,021,794	332,223
Totals	36,539,690	\$19,158,888	53,699,759	\$29,205,118	196,121,979	\$86,397,765	304,182,814	\$158,586,193	364,913,711	\$193,118,855
Rubber scrap	782,286	65,512	3,577,470	301,326	11,066,928	726,914	16,371,573	1,271,903	20,517,328	1,569,448
Totals, unmanufactured	37,321,976	\$19,224,400	57,277,229	\$29,506,444	207,188,907	\$87,124,679	320,554,387	\$159,858,096	385,431,039	\$194,688,303
Chicle	681,294	\$286,338	922,578	\$426,045	6,499,664	\$2,459,810	7,346,969	\$2,829,184	7,440,022	\$3,538,353
MANUFACTURED—dutiable:										
Gutta percha		\$24,105		\$2,512		\$10,841		\$57,875		\$173,975
India rubber		56,447		60,501		791,281		398,020		608,954
Totals, manufactured		\$80,552		\$63,013		\$802,122		\$455,895		\$782,929
Substitutes—elasticon, etc.		\$735		\$5,641		\$30,349		\$16,179		39,811

EXPORTS OF DOMESTIC MERCHANDISE.

[illegible]

EXPORTS OF FOREIGN MERCHANDISE.

[illegible]

EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

MANUFACTURED—										
To—										
Alaska:										
Belting, hose and packing.	.....	\$8,253	.....	\$22,093	.....	\$107,176	.....	\$128,749	.....	\$161,464
Boots and shoes.....pairs	6,252	17,267	8,780	29,306	55,719	152,241	74,759	197,060	111,045	272,688
Other rubber goods.....		4,671		4,358		17,179		40,449		46,036
Totals		\$30,191		\$55,757		\$276,596		\$366,258		\$480,188
To—										
Hawaii:										
Belting, hose and packing.	.....	\$6,723	.....	\$7,541	.....	\$69,562	.....	\$90,952	.....	\$88,766
Automobile tires		34,209		50,219		439,553		523,793		735,786
Other tires		11,266		4,069		66,526		86,086		85,934
Other rubber goods.....		8,342		18,818		52,484		90,660		195,001
Totals		\$60,540		\$80,647		\$628,125		\$791,491		\$1,105,487
To—										
Philippine Islands:										
Belting, hose and packing.	.....	\$1,630	.....	\$10,043	.....	\$58,606	.....	\$57,686	.....	\$63,697
Boots and shoes.....pairs	11,267	7,676	26,425	18,045	22,865	22,019	28,140	22,681	288,646	200,376
Tires		54,872		19,886		332,746		422,918		436,096
Other rubber goods.....		8,558		14,130		120,326		247,023		114,395
Totals		\$72,736		\$62,104		\$533,697		\$750,308		\$814,564
To—										
Porto Rico:										
Belting, hose and packing..	.....	\$4,533	.....	\$5,376	.....	\$28,365	.....	\$42,539	.....	\$52,118
Automobile tires		36,698		55,278		251,426		403,530		584,732
Other tires		553		1,864		26,665		30,462		8,717
Other rubber goods.....		11,384		11,325		56,141		74,975		104,563
Totals		\$53,168		\$73,843		\$362,597		\$551,506		\$750,130

* Dutiable beginning July 1, 1916.

† Not separately stated prior to January 1, 1916.

EXPORTS OF INDIA RUBBER FROM MANAOS DURING JULY, 1917.*

EXPORTERS.	NEW YORK.					EUROPE.					GRAND TOTALS.
	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	
Tancredo Porto & Co.....kilos	87,823	24,870	37,372	62,800	212,865	11,653	34,234	1,085	12,018	58,990	271,855
General Rubber Co. of Brazil....	101,995	36,567	24,741	266,697	430,000	59,236	23,831	710	11,223	95,000	525,000
Stowell & Co.....	17,510	7,005	10,513	62,560	97,588	92,802	3,360	2,988	40,053	139,293	236,881
Adelbert H. Alden, Limited.....	4,722	3,142	4,481	451	12,796	18,181	.....	16	54,567	72,764	85,560
J. G. Araujo.....	191	15	13,853	.....	14,059	28,143	1,587	1,816	11,085	42,631	56,690
H. Balding	4,440	294	270	15,710	20,714	.....	.....	.....	.....	.....	20,714
G. Fradelizi .....	.....	6,919	1,054	450	8,423	.....	.....	.....	.....	.....	8,423
Amorim Irmaos	378	3,196	1,885	796	6,255	.....	.....	.....	.....	.....	6,255
Thomas Levy Camille & Co.....	.....	.....	.....	.....	.....	.....	.....	5,020	940	5,960	5,960
Bezerra & Co.....	.....	.....	605	1,500	2,105	.....	.....	.....	.....	.....	2,105
* Braga Vieira & Co.....	.....	.....	276	597	873	.....	.....	.....	.....	.....	873
Totals, Manaoas	217,059	82,008	95,050	411,561	805,678	210,105	63,012	11,635	129,886	414,638	1,220,316
In transit, Iquitos.....	305,975	2,268	20,759	214,330	543,332	29,814	176	1,574	88,549	120,113	663,445
Totals	523,034	84,276	115,809	625,891	1,349,010	239,919	63,188	13,209	218,435	534,751	1,883,761

*The figures published under this head in our September issue were for Para and Manaoas.

Compiled by Stowell & Co.

EXPORTS OF INDIA RUBBER FROM MANAOS DURING AUGUST, 1917.

EXPORTERS.	NEW YORK.					EUROPE.					Grand Totals.
	Fine.	Medium.	Coarse.	Caucho.	Totals.	Fine.	Medium.	Coarse.	Caucho.	Totals.	
General Rubber Co. of Brazil..kilos	89,938	4,955	26,214	86,893	208,000	130,391	19,389	140	80	150,000	358,000
Stowell & Co.....	6,010	320	10,490	.....	16,820	84,160	3,840	2,100	23,360	113,460	130,280
Tancredo, Porto & Co.....	39,729	3,857	9,300	7,333	60,219	32,120	1,760	.....	.....	33,880	94,099
G. Fradelizi	12,070	7,880	2,611	15,361	37,922	.....	.....	.....	.....	.....	37,922
H. Balding .....	.....	.....	.....	.....	.....	4,705	684	380	30,626	36,395	36,395
T. G. Aranjio.....	.....	.....	.....	.....	.....	10,560	6,890	900	.....	18,340	18,340
Ohliger & Co.....	9,067	251	2,178	5,546	17,042	.....	.....	.....	.....	.....	17,042
T. Essabba & Co.....	1,920	288	2,178	9,167	11,456	.....	.....	.....	.....	.....	11,456
Adelbert H. Alden, Limited.....	.....	523	462	1,982	2,967	3,717	.....	.....	186	3,903	6,870
H. Semper	5,189	.....	920	35	6,144	.....	.....	.....	.....	.....	6,144
Oscar Ramos .....	.....	.....	.....	.....	.....	2,340	261	1,254	305	4,160	4,160
W. Peters	170	.....	2,265	750	3,185	.....	.....	.....	.....	.....	3,185
Totals	164,093	18,074	54,521	127,067	363,755	267,993	32,814	4,774	54,557	360,138	723,893

LONDON AND LIVERPOOL RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

IMPORTS.		
July, 1917.		
UNMANUFACTURED—	POUNDS.	£.
Crude rubber:		
At—		
London	11,067,300	1,417,680
Liverpool	3,980,800	498,432
Totals	15,048,100	1,916,112
Waste and reclaimed rubber:		
At—		
London	20,700	391
Liverpool	40,900	1,708
Totals	61,600	2,099
RE-EXPORTS.		
Crude rubber:		
From—		
London	6,682,900	1,015,078
Liverpool	814,500	104,892
Totals	7,797,400	1,119,970
Waste and reclaimed rubber:		
From—		
Liverpool	4,500	2,901

UNITED KINGDOM RUBBER STATISTICS.

The import and export figures by countries usually published in this table are withheld by the British Government.

IMPORTS.		
July, 1917.		
UNMANUFACTURED—	POUNDS.	£.
Crude rubber	15,860,700	2,001,437
Waste and reclaimed rubber	73,300	1,842
Gutta percha	210,560	32,221
Totals	16,144,560	2,035,500
MANUFACTURED—		
Apparel, waterproofed	619	
Boots and shoes, <i>dos. pairs</i>	4,119	9,250
Insulated wire	2,670	
Automobile tires and tubes	26,309	
Motorcycle tires and tubes	1,386	
Cycle tires and tubes	11,279	
Tires not specified	669	
Total	52,182	
EXPORTS.		
July, 1917.		
UNMANUFACTURED—	POUNDS.	£.
Waste and reclaimed rubber	1,719,800	29,786
MANUFACTURED—		
Apparel, waterproofed	51,325	
Boots and shoes, <i>dos. pairs</i>	8,787	12,463
Insulated wire	5,694	
Automobile tires and tubes	105,765	
Motorcycle tires and tubes	24,935	
Cycle tires and tubes	35,874	
Tires not specified	15,569	
Manufactures not specified	155,730	
Total	407,275	
EXPORTS—FOREIGN AND COLONIAL.		
July, 1917.		
UNMANUFACTURED—	POUNDS.	£.
Crude rubber	7,545,600	1,126,552
Waste and reclaimed rubber	4,500	291
Gutta percha	10,528	1,188
Totals	7,560,628	1,128,031
MANUFACTURED—		
Apparel, waterproofed	89	
Boots and shoes, <i>dos. pairs</i>	3,106	3,632
Insulated wire	4,511	
Automobile tires and tubes	24,813	
Motorcycle tires and tubes	507	
Cycle tires and tubes	771	
Tires not specified	4,790	
Total	39,113	

RUBBER STATISTICS FOR ITALY.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

Four Months Ended April, 1917.		
UNMANUFACTURED—	POUNDS.	LIRE.
India rubber and gutta percha—raw and reclaimed:		
From—		
Great Britain	647,680	
Straits Settlements	31,680	
African French Colony	40,480	
Belgian Congo	139,040	
Brazil	2,058,100	
Other countries	848,320	
Totals	3,765,300	15,403,500
Rubber scrap	320,540	145,700
MANUFACTURED—		
India rubber and gutta percha—threads:		
From—		
Great Britain	11,440	
United States	7,040	
Other countries	1,100	
Totals	19,580	178,000
India rubber and gutta percha—sheets:		
Cut sheets	440	3,500
Hard rubber	7,920	31,320
India rubber and gutta percha—tubes:		
From cut sheet	220	1,850
Elastic fabric	6,820	21,700
Other forms	1,320	4,800
Belting	36,740	133,600
Rubber coated fabrics, <i>pieces</i>	34,340	150,675
Other fabrics:		
From—		
Great Britain	5,280	
Other countries	2,420	
Totals	7,700	45,500
Boots and shoes— <i>pairs</i> :		
From—		
France	5,709	
United States	8,334	
Other countries	97	
Totals	14,140	91,910
Elastic webbing:		
From—		
France	14,960	
Great Britain	5,280	
Other countries	2,420	
Totals	22,660	175,100
Clothing and articles for travel	880	9,600
Articles not specified:		
From cut sheets	6,820	68,200
Fabrics:		
From—		
France	3,960	
Great Britain	42,020	
Other countries	6,380	
Totals	52,360	226,100
Tires and tubes:		
From—		
France	171,600	
Great Britain	158,620	
Other countries	14,520	
Totals	344,740	2,444,520
Other rubber manufactures:		
From—		
France	50,160	
Great Britain	106,700	
United States	38,060	
Other countries	880	
Totals	195,800	712,000
Total Imports	19,847,575	

EXPORTS OF CRUDE AND MANUFACTURED RUBBER.

Four Months Ended April, 1917.		
UNMANUFACTURED—	POUNDS.	LIRE.
India rubber and gutta percha—raw and reclaimed:		
To—		
Spain	72,600	
United States	323,400	
Totals	396,000	540,000
India rubber and gutta percha—threads:		
To—		
France	7,040	
Great Britain	6,160	
Spain	5,940	
Switzerland	3,520	
Argentina	3,520	
Other countries	880	
Totals	27,060	233,700
India rubber and gutta percha—sheets:		
Cut sheets	880	6,800
Elastic fabric	2,860	7,800
Insulated wire	220	350
Hard rubber	8,800	34,000
India rubber and gutta percha—tubes:		
Elastic fabrics	17,160	50,700
Other forms	26,840	91,500
Belting	1,760	5,760
Rubber coated fabrics, <i>pieces</i>	21,340	97,000
Elastic webbing:		
To—		
France	1,320	
Greece	3,960	
Spain	6,380	
Switzerland	24,860	
Egypt	6,160	
Argentina	26,840	
Brazil	51,920	
Chili	6,380	
Cuba	6,820	
Other countries	10,560	
Totals	145,200	1,056,000
Clothing and articles for travel	5,500	57,500
Articles not specified:		
From cut sheets:		
To—		
Great Britain	660	
Argentina	3,960	
Uruguay	1,760	
Other countries	220	
Totals	6,600	60,000
Fabrics	11,880	48,600
Tires and tubes:		
To—		
France	297,000	
Great Britain	923,560	
Switzerland	1,100	
India and Ceylon	216,920	
Australia	440	
Argentina	165,880	
Brazil	105,600	
Other countries	337,700	
Totals	2,048,200	9,635,850
Other rubber manufactures:		
To—		
France	22,220	
Great Britain	20,680	
Spain	2,420	
Switzerland	11,000	
Egypt	1,100	
Argentina	45,100	
Brazil	18,040	
Uruguay	7,700	
Other countries	15,180	
Totals	143,440	586,800
Total Exports		12,512,360

The nominal value of a lira is \$0.193.

BRAZILIAN IMPORTS OF RUBBER MANUFACTURES.

	Kilos.		Mileis.	
	1915.	1916.	1915.	1916.
Toys	1,809	9,293	20,708	93,255
Boots and shoes	7,356	16,349	41,439	98,452
Automobile tires and tubes.....	438,322	547,314	2,274,478	3,164,200
Solid automobile tires.....	43,069	141,928	124,628	508,220
Sheet rubber	19,860	19,081	55,403	79,067
Hose	56,474	101,549	282,875	425,210
Manufactures not specified.....	129,504	234,020	994,980	2,230,552
Totals	696,394	1,069,534	3,794,511	6,598,956

THE MARKET FOR RUBBER SCRAP.

Copyright, 1917.

NEW YORK.

CONDITIONS in the rubber scrap market for September have been practically the same as those of the month previous, and values have undergone but little change. The quiet situation may be attributed to the prevailing uncertainty in raw materials, due to the open question of government price plans, and all industries appear to be waiting.

The mills have shown small interest in replacements, and comparatively few inquiries were received during the past month. Sellers, however, have confidence that the consumers' stocks are quite low, and that a buying movement is due in the near future. This sentiment is the cause of the strong market undertone that has prevailed in the latter part of September.

Boots and shoes have received small attention from the consumers, as ruling prices were apparently not attractive, and holders have refused to make concessions. Sales of limited lots were reported at 9½ to 9¾ cents, delivered. Trimmed and untrimmed arctics were easy. Tires as a whole were neglected, and the volume of business transacted has been almost negligible. Supplies have arrived from collecting points in fair lots, but the volume of trading has been hardly sufficient to make a market. The demand for G. & G. has been almost nil and prices, therefore, are largely nominal. Truck and bicycle tires have been in fairly active demand.

INNER TUBES appear to have been entirely forgotten, and dull conditions have characterized this market for the past month. Prices have not changed and are considered nominal.

MECHANICALS have received some attention, particularly hose, and later in the month both white and black scrap were in fair demand. Prices are firm and practically unchanged.

STATISTICS. The imports of waste and reclaimed rubber from London and Liverpool for July were 61,600 pounds, value £2,099, compared with 109,700 pounds, value £2,142 for June. Exports of waste and reclaimed rubber manufacturers of the United Kingdom for July were 78,800 pounds, value £4,743, compared with 1,256,800 pounds, value £25,607, for June.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED

SEPTEMBER 25, 1917.

Prices subject to change without notice.

	PER POUND.
Boots and shoes.....	\$0.09½ @ .09½
Trimmed arctics .....	.07¼ @ .07¾
Untrimmed arctics .....	.06½ @ .06¾
White tires, Goodrich and Goodyear.....	.07¼ @ .07¼
Auto tires, standard white.....	.07½ @ .07½
standard mixed .....	.06¾ @ .06¾
stripped, unguaranteed .....	.05¼ @ .05¼
Auto peelings, No. 1.....	.10 @ .10
No. 2.....	.09 @ .09
Inner tubes, No. 1.....	.24 @ .24
Free from patches and valve seats.....	.25 @ .25
No. 2.....	.13 @ .13
red .....	.13 @ .13
Irony tires .....	.02¼ @ .02¼
Bicycle tires .....	.05¼ @ .05¼
Solid tires .....	.06¼ @ .07
Clean truck tires.....	.07¼ @ .07¾
White scrap, No. 1.....	.14 @ .14
No. 2.....	.10 @ .10

Red scrap, No. 1.....	.09½ @ .09½
No. 2.....	.07¾ @ .07¾
Mixed black scrap, No. 1.....	.05¼ @ .05¼
No. 2.....	.04½ @ .04½
Rubber car springs.....	.05½ @ .05½
Horse shoe pads.....	.05 @ .05
Mating and packings.....	.01¾ @ .01¾
Garden hose .....	.02¼ @ .02¼
Air brake hose.....	.06¼ @ .06¼
Cotton fire hose.....	.02¾ @ .02¾
Large hose .....	.02¾ @ .02¾
Hard rubber scrap, No. 1, bright fracture.....	.26 @ .28
Battery irons (black compound).....	.03¼ @ .03¼
Insulated wire stripping, free from fiber.....	.04¼ @ .04¼
Rubber heels .....	.04¼ @ .04¼

THE MARKET FOR CHEMICALS AND COMPOUND-INGREDIENTS.

Copyright, 1917.

NEW YORK.

BASE METALS.—The general dullness that marked the first two weeks of the month was changed to a better tone when the leading producers of pig lead made a reduction in price that was followed later in the month by an 8 cent quotation, the figure the government is now paying for monthly requirements. The result is the consumers are buying more freely. Spelter inquiries responded freely to these improved conditions, the market becoming stronger than it has been for some time and with a better undertone. A gradual improvement is anticipated and a strong buying movement expected in the near future. The asking price for September delivery was 8¾ to 8½ cents. Antimony has been generally dull with little demand at prices for September ranging from 14¾ to 15¼ cents.

In anticipation of fall business, the general demand for rubber makers' chemicals has been fairly good and considerable activity was noticed in certain materials, particularly the lead products, while others have been quiet. The reduction of 3 cents in the price of pig lead during the past three weeks had an unsettling effect on the market, resulting in a decline of 1½ to 2 cents in lead pigments.

In order that the rubber trade may be assured a supply of the non-leaded Horse Head brand of zinc oxide, the producer has sent out notices that only leaded brands of zinc oxide will be furnished to the paint trade after January 1.

ACETONE continues to be scarce, due to falling off in production as the result of labor shortage.

AMMONIUM CARBONATE is scarce and higher.

BARYTES is firm and stocks small, with no immediate prospect of increased supply.

DRY COLORS have been in fair demand but the mills have shown little disposition to stock up, preferring to wait developments.

RECLAIMED RUBBER has been fairly active during the month, the call for quick deliveries being particularly heavy.

RUBBER SUBSTITUTE, both black and white, has advanced and prices are firm, due to the strong position of the raw material.

SOLUBLE OIL COLORS in orange, yellow and black are now obtainable in fairly regular quantities.

TOLUOL is quoted nominally \$1.75 to \$2.00 a gallon, but supplies are practically exhausted.

ZINC OXIDE.—The new prices on French process zinc oxide, effective October 1, are on the basis of 15 cents for white seal in carload lots and 15½ cents for less than carload lots, 14½ cents for green seal in carload lots and 14¾ cents for less than carload lots, and 14 cents for red seal for carload lots and 14¼ cents for less than carload lots.

NEW YORK QUOTATIONS.

SEPTEMBER 25, 1917.

Subject to change without notice.

Accelerene	lb. *\$2.62 @
Acetone (drums)	lb. .35 @ .36
Acid, acetic, 28 per cent. (bbls.).....	lb. .05¼ @
glacial, 99 per cent (carboys).....	lb. .35 @
creylic, 97-99 per cent, straw color.....	gal. 1.10 @

95 per cent, dark.....gal.	1.00 @	Lithopone, imported.....lb.	.12 @ .14
muriatic, 20 degrees.....lb.	.01 1/4 @	domestic.....lb.	.06 1/4 @
nitric, 36 degrees.....lb.	.06 1/4 @	Beckton white (carloads).....lb.	.06 1/4 @ .07
sulphuric, 66 degrees.....lb.	.01 1/4 @	Rubber makers' white.....lb.	.06 1/4 @ .07
Aldehyde ammonia (crystals).....lb.	1.00 @	Magnesium, carbonate, 150 mesh.....lb.	.02 @
Aluminum flake (carloads, bbls.).....ton	24.00 @	calcined, heavy, Thistle Brand.....lb.	.12 @
(carloads, sacks).....ton	22.00 @	light.....lb.	.70 @ .75
Ammonium carbonate, powdered.....lb.	.12 @	Magnesia, carbonate.....lb.	.09 @
lumps.....lb.	.11 1/4 @	oxide, 120 mesh.....lb.	.04 @
Antimony, crimson, sulphuret of (casks).....lb.	.45 @	Magnesite, calcined, powdered.....ton	40.00 @ 50.00
crimson, "Magmetco".....lb.	.45 @	Mica, powdered.....lb.	.03 1/4 @ .05
crimson, "Mephisto" (casks).....lb.	.48 @	Mineral rubber, "M. R. X.".....ton	100.00 @
golden, sulphuret of.....lb.	.25 @ .26	"Genasco" (carloads).....ton	50.00 @
golden, "Magmetco".....lb.	.30 @	"Pioneer".....ton	45.00 @
golden, "Mephisto" (casks).....lb.	.27 @	"No. 64 Brand".....lb.	.03 @
golden, sulphuret, States brand, 16-17 per cent, lb.	.28 @	"Refined Elaterite".....ton	40.00 @
red sulphuret, States brand.....lb.	.25 @	Naphtha, stove gasoline (steel bbls.).....gal.	.24 @
vermillion sulphuret.....lb.	.60 @	66@68 degrees (steel bbls.).....gal.	.27 @
Arsenic, red sulphide.....lb.	.65 @	68@70 degrees (steel bbls.).....gal.	.28 @
Asbestine (bags).....ton	22.00 @ 25.00	V. M. & P. (steel bbls.).....gal.	.23 @
Asbestos (bags).....ton	*35.00 @ 50.00	Oil, aniline.....lb.	.27 @
Barium carbonate, precipitated.....lb.	.04 1/4 @ .04 1/2	corn, refined Argo (carloads).....cut.	17.46 @
Barium sulphide, precipitated.....lb.	.04 @	linseed (bbl.).....gal.	1.18 @
Barytes, pure white.....ton	32.00 @ 33.00	palm.....lb.	.17 @ .21
off color.....ton	18.00 @ 20.00	paraffin.....lb.	.17 @ .28
Basofo.....ton	80.00 @	pine, steam distilled.....gal.	*.47 @
Benzol, pure.....gal.	.55 @	pine tar.....gal.	*.28 @
90 per cent.....gal.	.50 @	rapeseed, blown.....gal.	*1.60 @ 1.70
Beta-Naphthol.....lb.	.65 @ .70	rosin.....gal.	.35 @
Brown oxide of iron.....lb.	.01 1/4 @ .02	tar (cases).....gal.	.27 @ .34
sienna, raw and burnt.....lb.	.05 @	soluble aniline, yellow, orange.....lb.	2.50 @
umber, raw and burnt.....lb.	.05 @	black.....lb.	1.25 @
ochre, domestic.....lb.	.02 @ .03	Orange mineral, domestic.....lb.	.13 @
imported.....lb.	.04 @ .04 1/2	Osymony.....lb.	.15 @
Bone ash.....lb.	.10 @	Paragol, soft and medium (carloads).....cut.	11.50 @
black, powdered.....lb.	.15 @	hard.....cut.	11.00 @
granular.....lb.	.20 @	Petrolatum.....lb.	.05 1/4 @
Cadmium tri-sulphate (f. o. b. London).....lb.	2.68 @	Petroleum grease.....lb.	.04 1/4 @ .04 1/2
sulphide, yellow.....lb.	*2.25 @	Pine tar retort.....bbl.	16.00 @
Castella gum.....lb.	.38 @	kiln.....gal.	*2.90 @
Carbon, bisulphide (drums).....lb.	.06 1/4 @	Pitch, Burgundy.....lb.	.05 1/4 @ .06
black (cases).....lb.	.25 @ .35	coal tar.....lb.	*.01 @
tetrachloride (drums).....lb.	.17 @ .18	pine tar.....lb.	*.02 1/4 @
Caustic soda, 76 per cent.....lb.	.10 @ .10 1/2	Plaster of paris.....bbl.	2.00 @ 3.00
Chalk, precipitated, extra light.....lb.	*.05 @ .05 1/2	Prussian blue.....lb.	.70 @
precipitated, heavy.....lb.	*.04 @ .04 1/2	Pumice stone, powdered (bbls.).....lb.	.03 1/4 @
China clay, domestic (powdered).....ton	*20.00 @ 25.00	Reclaimed rubber, Standard shoe reclaim.....lb.	.16 @
imported (powdered).....ton	*45.00 @	Standard tire reclaim.....lb.	.20 @
Chrome, green.....lb.	.45 @	Resin, Pontianak, refined.....lb.	*.28 @
yellow.....lb.	.23 @	granulated.....lb.	*.25 @
Cobalt blue.....lb.	.35 @ .50	fused.....lb.	*.25 @
Cotton linters, clean mill run.....lb.	.06 @	Rosin, K. (280 lbs.).....bbl.	6.60 @ .04
Excellerex.....lb.	.85 @	Rotten stone, powdered.....lb.	.02 1/4 @
Fossil flour.....ton	60.00 @ 65.00	Rubber black, black.....lb.	.06 @ .15
Gas black (cases).....lb.	.25 @ .35	Rubber substitute, black.....lb.	.10 @ .15
Gilsonite.....ton	40.00 @ 42.00	white.....lb.	.15 @ .20
Glue, high grade.....lb.	.45 @ .60	brown.....lb.	.15 @ .20
medium.....lb.	.30 @ .40	brown factice.....lb.	.09 @ .20
low grade.....lb.	.18 @ .25	white factice.....lb.	.12 @ .20
Glycerine, C. P. (drums).....lb.	.68 @ .70	Rubhide.....lb.	.38 @
Graphite, flake (400 pound bbl.).....lb.	.15 @	Shellac, fine orange.....lb.	.60 @ .67
amorphous.....lb.	.06 @	Silex (silica).....ton	20.00 @ 36.00
Green oxide of chromium (casks).....lb.	.80 @	Soapstone, powdered corn (carload, bbls.).....cut.	5.84 @
Ground glass FF. (bbls.).....lb.	.02 1/4 @	Starch, powdered corn (carload, bags).....cut.	5.73 @
Hexamethylene Tetramine (powdered).....lb.	.80 @	Sulphur chloride (drums).....cut.	.06 1/4 @ .07 1/2
Indian red, reduced grades.....lb.	.04 @ .09	Sulphur, flour, velvet brand (carloads).....cut.	3.95 @
pure bright.....lb.	.12 @	pure soft.....cut.	3.95 @ 4.50
Infusorial earth, powdered.....ton	60.00 @	Talc, American.....ton	18.00 @ 20.00
bolton.....ton	65.00 @	French.....ton	40.00 @ 45.00
Iron oxide, red, reduced grades.....lb.	.04 @ .10	Tar, coal.....bbl.	4.25 @
red, pure, bright.....lb.	.12 @ .16	Thiocarbamide.....lb.	*.50 @
red, excelsior.....lb.	.18 @	Tolmol, pure.....gal.	*1.75 @ 2.00
Ivory, black.....lb.	.16 @ .30	Tripoli earth, powdered.....ton	60.00 @
Lampblack.....lb.	.14 @ .20	bolton.....ton	65.00 @
Lead, dry red.....lb.	.11 @	Turpentine, pure gum spirits.....gal.	.44 @
sublimed blue.....lb.	*.11 @	wood.....gal.	.37 @ .40
sublimed white.....lb.	.09 1/2 @	Venice.....lb.	.08 @
white, basic carbonate.....lb.	.10 @	Tyre-lith.....ton	100.00 @
white, basic sulphate.....lb.	.09 1/4 @	Ultramarine blue.....lb.	.25 @
black hyposulphite (Black Hypo).....lb.	*.50 @	Vermilion.....lb.	*.65 @ .80
Lime, flour.....lb.	.01 @ .01 1/4	Chinese.....lb.	*2.50 @
Litharge, domestic.....lb.	.10 1/4 @ .12 1/4	English.....lb.	1.90 @ 2.00
English.....lb.	.15 @ .16	Wax, beeswax, white.....lb.	.67 @ .70
sublimed.....lb.	.10 1/4 @	ceresin, white.....lb.	.12 1/2 @ .20
		carnauba.....lb.	.42 @ .52
		cokerite, black.....lb.	.58 @ .60
		green.....lb.	.65 @ .67
		montan.....lb.	.20 @
		paraffin, refined 118/120 m. p. (cases).....lb.	.10 @ .10 1/4
		123/125 m. p. (cases).....lb.	.10 1/4 @ .10 3/4
		128/130 m. p. (cases).....lb.	.12 @ .12 1/2
		133/136 m. p. (cases).....lb.	*.12 @
		Whiting, Alba.....cut.	1.00 @ 1.25
		commercial.....cut.	1.25 @ 1.30
		gilders.....cut.	1.35 @ 1.45
		Paris, white, American.....cut.	1.50 @ 1.75
		English cliffstone.....cut.	1.75 @ 2.00
		Wood pulp XXX.....ton	*35.00 @
		Yellow ochre.....lb.	.04 @ .05
		india rubber.....lb.	1.50 @
		Zinc oxide, American process, horsehead brand.....lb.	.10 1/2 @
		"XX red".....lb.	.11 @
		f. o. b. factory.....lb.	.11 @
		French process, red seal.....f. o. b. factory.....lb.	.15 1/4 @
		green seal.....f. o. b. factory.....lb.	.15 1/4 @
		white seal.....f. o. b. factory.....lb.	.16 1/4 @
		Zinc sulphide, pure.....lb.	None

* Nominal.

THE MARKET FOR COTTON AND OTHER FABRICS.

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NEW YORK.

UNSETTLED conditions have prevailed in the American cotton market during the past month, resulting in wide fluctuations that have recorded gains up to September 25 of about two cents for spot middlings and $1\frac{1}{4}$ cents for January futures. The usual rumors of reduced production, inability to handle the crops and peace talk, were largely responsible for this movement. Later in the month prices eased off, due to a quiet market, better crop prices and more active selling in southern markets. On September 25, spot middling cotton was quoted 25.35 cents, compared with 15.95 cents last year. January futures were 23.54 cents, compared with 16.18 cents a year ago.

EGYPTIAN COTTON. The recent decision of the Egyptian government to reduce the next season's acreage under cotton in order to increase the acreage in cereals is a new condition for consumers to anticipate. While irregular, direct sailings are expected from Alexandria to Boston during the coming season. The fact that it will not be possible to sell Egyptian cotton on a c.i.f. price, or to stipulate even an approximate date of sailing, will make it difficult for the spinner to sell Egyptian yarn in competition with Peeler. However, things may change before the mills that are still well supplied with raw cotton come into the market for the new crop cotton. The latest crop cable under date of September 20 indicates crop prospects improved, with an estimated crop of $5\frac{3}{4}$ to $6\frac{1}{4}$ million cantars.

The Boston Egyptian market has declined considerably during the last month and the quotation on September 21 for new crop, November shipment, Medium Sakelarides, was 42 cents, and Medium Uppers (Ashmouni), 35 cents f.o.b. Alexandria. Last year at about this time prices were 14 cents lower.

SEA ISLAND COTTON. There was very little business recorded in southern markets last month, owing to the high prices asked by interior holders. Little cotton was offered, and the quotations of 60 to 61 cents for Georgias and Floridas in the Savannah market are largely nominal.

Very serious damage is reported by the boll weevil around Valdosta and throughout southern Georgia, where a very large percentage of the crop is grown, and it is estimated that only one-fourth of a crop will be made in this section. There has been some increase in acreage in other sections, which will partly offset this damage, but crop estimates are reduced, and range from 100,000 bales to 120,000 bales for the total crop.

MECHANICAL DUCKS. Activity in all grades has featured this market for the past month and prices, while unchanged, are strong. Government requirements are still the dominating factor in the duck situation, which will not be changed until military orders are filled.

RAINCOAT FABRICS. The many contracts placed last month by the government for slickers have created a heavy demand for 64 by 60 water repellent bombazine, dyed olive drab. Several million yards were sold at $13\frac{1}{2}$ cents for October to March delivery. Many buyers, influenced by the advance in cotton, have purchased all lines of goods very freely. The belief is general that prices will remain steady, as the demand is good and most mills are sold up for this year; therefore, there is only a slight possibility of prices declining for some time.

SHEETINGS, OSNABURGS AND DRILLS. There was an improvement noticed in the movement of these fabrics during the month, and while prices show a decline since our last report, the undertone is firm. The mills are reluctant to sell futures on account of the erratic fluctuations of the cotton market. Carriage cloth duck has moved slowly at firm prices.

TIRE FABRICS. The situation has been quiet with comparatively small new business, while the mills have continued to be busy

on old contracts. Consumers are expected to enter the market early in October for present and future requirements, as the raw material and labor situation does not indicate lower tire values in the near future. Prices have undergone little change during the month.

NEW YORK QUOTATIONS.

SEPTEMBER 25, 1917.

Prices subject to change without notice.

Airplane and Balloon Fabrics:			
Wamsutta, S. A. I. L. No. 1, 40-inch.....	yard	\$0.51	@
No. 4, 38½-inch.....		.50	@
for gas masks.....		.42½	@
Wool Stockinettes—52-inch:			
A—14-ounce	yard	1.75	@
B—14-ounce		2.25	@
C—14-ounce		2.50	@
Cotton Stockinettes—52-inch:			
D—14-ounce	yard	.85	@ .90
E—11½-ounce .....		.60	@ .65
F—14-ounce .....		.85	@ .90
G—8-ounce .....		.75	@ .80
H—11-ounce .....		.70	@ .85
I—9-ounce .....		.60	@ .65
Colors—white, black, blue, brown.			
Knitaback Stockinette	pound	1.60	@ 1.65
Tire Fabrics:			
17¼-ounce Sea Island, combed.....	square yard	1.50	@ 1.60
17¼-ounce Egyptian, combed.....		1.30	@ 1.35
17¼-ounce Egyptian, carded.....		1.20	@ 1.25
17¼-ounce Peelers, combed.....		1.00	@ 1.05
17¼-ounce Peelers, carded.....		.80	@ .85
Sheetings:			
40-inch 2.35-yard	yard	.17	@
40-inch 2.50-yard .....		.16½	@
40-inch 2.70-yard .....		.15½	@
40-inch 2.85-yard .....		.15	@
40-inch 3.15-yard .....		.16	@
Osnaburgs:			
40-inch 2.25-yard	yard	.17	@ .22
40-inch 2.48-yard .....		.16	@ .20
37½-in. 2.42-yard .....		.16	@ .20½
Mechanical Ducks:			
Hose	pound	.52	@ .55
Belting .....		.52	@ .53
Carriage Cloth Duck:			
38-inch 2.00-yard enameling duck.....	yard	.24	@ .25
38-inch 1.74-yard .....		.27	@ .30
72-inch 16.66-ounce .....		.52	@ .60
72-inch 17.21-ounce .....		.56	@ .60½
Drills:			
38-inch 2.00-yard	yard	.43	@
40-inch 2.47-yard .....		.19½	@
52-inch 1.90-yard		*.26½	@
52-inch 1.95-yard		*.26	@
60-inch 1.52-yard		*.33	@
Imported Woolen Fabrics Specially Prepared for Rubberizing—Plain and Fancies:			
63-in., 3¼ to 7½ ounces.....	yard	.60	@ 1.75
36-inch, 2¼ to 5 ounces.....		.40	@ .95
Imported Plaid Lining (Union and Cotton):			
63-inch, 2 to 4 ounces.....	yard	.50	@ 1.00
36-inch, 2 to 4 ounces.....		.42½	@ .75
Domestic Worsted Fabrics:			
36-inch, 4¼ to 8 ounces.....	yard	.45	@ .80
Domestic Woven Plain Linings (Cotton):			
36-inch, 3¼ to 5 ounces.....	yard	.12½	@ .27½
Raincoat Cloth (Cotton):			
Bombazine 64 x 60 water repellent.....	yard	.13½	@
60 x 48 not water repellent.....		.10½	@
Twills 64 x 72.....		*.16½	@ .17
64 x 102.....		*.22½	@ .25
Tweed		*.25	@ .30
Tweed, printed		*.10	@ .15
Plaids 60 x 48.....		.11½	@
56 x 44.....		.10½	@
Surface prints 60 x 48.....		.12½	@
64 x 60.....		.13½	@
Repp		*.19	@ .23½

Hurlaps:			
32—7½-ounce	100 yards	9.30	@
40—7½-ounce		11.00	@
40—8-ounce		11.15	@
40—10-ounce		15.10	@
40—10½-ounce		13.75	@
45—7½-ounce		12.50	@
45—8-ounce		13.00	@ 15.25
45—9½-ounce		15.15	@
48—10-ounce		18.00	@

*Nominal.

EGYPTIAN COTTON MOVEMENT.

FROM AUGUST 1 TO JULY 18, 1917.

To—	1916-17.	1915-16.	1914-15.
Liverpool	214,726	213,585	208,486
Manchester	131,609	137,299	149,429
Total shipments to Great Britain.....	346,335	350,884	357,915
To—			
France	27,735		
Spain	10,321	38,056	59,919
Italy	31,603		50,882
Switzerland	19,888	51,491	54,086
Russia		31,731	169,587
Greece	65	42,500	41,190
		785	2,392
Total shipments to continent.....	121,343	157,290	264,051
To—			
United States	120,731	193,788	164,067
India	100	11,555	25,265
Japan	11,455		16,581
Total shipments to all parts.....	599,964	727,227	802,614
Total crop (interior gross weight), cantar*		4,726,518	6,473,726

*Cantar equals 98 pounds.

(Compiled by Davies, Benachi & Co., Liverpool.)

TIRE FABRICS

JENCKES SPINNING COMPANY

PAWTUCKET RHODE ISLAND

COTTON TRADE NOTES—

O. A. BARNARD, one of the best known men in the cotton fabric industry, with an extensive connection among rubber manufacturers, has recently returned from Bretton Woods, where he spent the summer at the Mt. Washington Hotel.

It is estimated that 150,000,000 pounds of fabric, exceeding 300,000 bales of long staple cotton, will be required for this year's tire production.

The Narotex Co., Pawtucket, Rhode Island, has doubled its equipment within the past month. Auto tire wrappers form the largest part of the goods manufactured by this company, which makes narrow fabrics of all kinds.

Report has it that the Trion Co., Trion, Georgia, manufacturer of sheetings, drills and osnaburgs, has placed an order with the Whitin Machine Co. for the installation of 54 spinning frames of the tape driven and wide 4-inch gauge type.

COTTON CONFERENCE AT WASHINGTON.

Under the auspices of the National Council of American Cotton Manufacturers and with the approval of the Department of Commerce and of the Railroads' War Board of the Council of National Defense, a meeting will be held in Washington, D. C., at 10 A. M., Friday, October 5, with the object of effecting a speedier and more economic movement of the cotton crop than is practical under present conditions. Invitations to attend and participate in this conference are extended to all those interested in cotton and cotton manufactures.

NATIONAL ASSOCIATION OF COTTON MANUFACTURERS MEETING.

The National Association of Cotton Manufacturers will meet at Springfield, Massachusetts, October 18-20, 1917. An interesting program has been prepared including the following addresses:

"From Cotton Field to Cotton Mill," to be illustrated by motion picture films, by Fred Taylor, cotton technologist of the Department of Agriculture, Washington, D. C.

"Our New Problems," by Theodore E. Burton, president of the Merchants' National Bank, New York City.

"Co-operation between the Cotton Grower and the Cotton Manufacturer," by E. J. Watson, president of the Southern Cotton Congress and Commissioner of Agriculture for South Carolina.

"The Dye Situation in America," by I. F. Stone, vice-president of the National Aniline & Chemical Co. H. Gardner McKerrow will speak on the same subject.

At the banquet to be held on Friday at 7:30 P. M. it is expected that the principal speaker will be Dr. Nicholas Murray Butler, president of Columbia University, New York City.

JAVA PARA RUBBER.

When tapping was first begun on certain of the less well-financed Java estates in 1912, the small quantity of latex obtained did not warrant the purchase of expensive machinery. Hand machinery proved a failure, and smoking with coffee wood by the Brazilian method was tried with success. Smoked balls were turned out averaging to weigh at least 20 per cent more than crêpe from a given quantity of latex and having a viscosity of 74 against 69.4 for fine hard Para. As this new product sold for only about 9 per cent below the highest price paid for fine plantation, the increased weight gave a minimum excess profit of 10 per cent and so proved a profitable venture. There is, however, no more actual rubber by smoking than ordinary acid coagulation. This increased weight consists not of rubber but of imprisoned water and the shrinkage in subsequent manufacture is greatly in excess of that of crêpe. As the smaller estates become better established along modern lines this make-shift will hardly be continued, notwithstanding the claim of uniform quality obtained without chemicals, skilled labor and expert factory supervision.



Vol. 57

OCTOBER 1, 1917

No. 1

TABLE OF CONTENTS.

Editorials:	Pages.
Rubber Chemists in Wartime Spirit.....	1
Rubber in Airplane Building.....	1
The Second Liberty Loan.....	1-2
British Labor and War Problems.....	2
The Control of Rubber Prices.....	2
Minor Editorial.....	2
What I Saw in the Philippines—IV By Henry C. Pearson—Illustrated	3-6
War News in the Rubber Industry..... Illustrated	7-11
Roll of Honor.....	10
War Convention of Business Men.....	10
The Revised Licensed Export List.....	11
Government Tinning Test for Copper Wire.....	11
The Rapid Growth of United States Rubber Commerce	12
Convention of the American Chemical Society, The.....	13-18
The Rubber Section, with Photograph of Members Present.....	14-16
The Bureau of Standards Method for the Direct De- termination of Rubber. By J. B. Tuttle—Illustrated	17
The Effect of Copper on Crude Rubber. By Charles P. Fox.....	18
Chemistry:	
What the Rubber Chemists Are Doing.. Illustrated	19-20
Chemical Patents.....	20
Laboratory Apparatus..... Illustrated	21
The National Exposition of Chemical Industries.....	21
The Manufacture of Complexion Brushes.....	21
Machines and Appliances, New..... Illustrated	22-24
The Morris Trimming Machine. A Quick-Opening Vulcanizer Door. Link-Belt Electric Hoists. The Malm Rubber Punching Machine. Tire Section Cutter.	
Machinery Patents..... Illustrated	23-24
Machine for Impregnating Fabrics. Tire Bead Trim- ming Machine. Paper Wrapping Machine for Tires. Other Machinery Patents.	
Process Patents.....	24
New Goods and Specialties..... Illustrated	25-27
"Kamp Komforts." "Conceal O" for Bathroom Ob- jectionables. A Novelty for Knitters. For Lawn Bowlings. The "Resistal" Goggle. Tri-Plug Non- Slip Heels. Rubber Thread Insulation for Storage Batteries. The "Holdfast" and "Neverslip" Finger Devices. A Cushion Vacuum Heel. The "King" Safety Helmet for Aviators.	
Tires..... Illustrated	27
Remarkable Inner Tube Test. The Muncie Pneu- matic Truck Wheel. Hood Solid Tire Demountable Rim.	
Editor's Book Table.....	28
The Waterproofing of Fabrics. The Quest of the Long Staple Cotton. Office Organization and Man- agement. Exporters' Encyclopedia, 1917-18. Poor's Manual of Industrials, 1917. Stubbs' Buyers' Di- rectory for the Wholesale Drug, Chemical, and Allied Trades.	
New Trade Publications.....	28-29
Judicial Decisions.....	29
Inquiries and Trade Opportunities.....	29
The Obituary Record.....	30-31
George Hatch Quincy (Portrait). Clayton Beadle. Walter F. Medding. Dr. John M. Grosvenor. Edwin Reynolds. Charles W. Dailey, Jr. George T. Sin- gleton. Stanley F. Richardson.	
Government Standards Have Changed.....	31
One Billion Gallons of Synthetic Gasoline in 1918.....	31
The Rubber Association of America.....	32
American Rubber Trade—News Notes and Personals..	33-39
Rubber Company Share Quotations.....	33
Rubber Company Dividends.....	33
New Incorporations.....	35
J. N. Kirk, Jr.—Portrait and Sketch.....	36
Canadian Notes..... Illustrated	40
Sale of the Boston Belting Co..... Illustrated	41
Domestic Correspondence:	
Boston..... By Our Correspondent	42
Akron..... By Our Correspondent—Illustrated	42-43
Rhode Island..... By Our Correspondent	43-44
How Cleveland's Dental Plate Saved the Nation.....	44
Intercontinental Rubber Co.'s Statement.....	45
Foreign Rubber News:	
Great Britain..... By Our Correspondent	46-47
France.....	47
Customs Modifications and Regulations.....	47
Foreign Trade Reports.....	47
Planting:	
Malaya.....	48
South Africa.....	49
Dutch East Indies.....	49-50
Brazilian Notes.....	50
Standardized Rubber for Trinidad..... Illustrated	50
Patents Relating to Rubber.....	51-52
The United States. The United Kingdom. Canada. France. Australia.	
Trade-Marks.....	52-53
United States. The United Kingdom. Canada. Australia. New Zealand. Italy. France.	
Designs..... Illustrated	53
Rubber Ear Cushions for the Navy..... Illustrated	53
Markets	
Crude Rubber.....	54
Market Cables.....	55
Singapore Rubber Auctions.....	55
Rubber Scrap.....	62
Chemicals and Ingredients.....	62-63
Cotton and Other Fabrics.....	64-65
Statistics:	
Brazil, Manaus Exports.....	60
Imports of Rubber Manufactures.....	62
Canada Rubber Statistics.....	58
Ceylon, Rubber Exports and Imports.....	56
Cotton Crop Movement.....	65
Italy, Rubber Statistics for April, 1917.....	61
Malaya, Rubber Exports.....	56
Penang, Rubber Exports.....	56
Singapore, Rubber Imports and Exports.....	55
United Kingdom Rubber Statistics.....	61
London and Liverpool Rubber Statistics.....	61
United States, Fiscal Year.....	59-60
Custom House Statistics.....	58
New York Arrivals of Crude Rubber.....	56-57
Statistics for July, 1917.....	58
San Francisco Arrivals of Crude Rubber.....	57
Seattle Arrivals of Crude Rubber.....	57

